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TRANSACTIONS

OF THE

MEDICO-BOTANICAL SOCIETY

OF

LONDON,

FOR 1832 AND 1833.

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TRANSACTIONS

OF THE

MEDICO-BOTANICAL SOCIETY OF LONDON.

HOLLY AND ILICINE.

AN ESSAY ON THE USE OF HOLLY AND ILICINE IN THE CURE OF INTERMITTENT FEVERS, *(for which the Silver Medal of the Session* 1852 *was awarded.)* By L. F. E. ROUSSEAU, M.D., Chef des Travaux Anatomiques au Muséum d'Histoire Naturelle de Paris, Membre de plusieurs Societes savantes, nationales et étrangères, &c.

[Read at a General Meeting of the Fellows, 12th June, 1852; Paul SAXBRIDGE, President, in the Chair. Translated and communicated by GEORGE CLENDINNING, Esq., Secretary.]

THE Medico-Botanical Society of London having proposed to award a silver medal to whomsoever should make known "the medicinal qualities and uses of any indigenous plants the properties of which are not yet sufficiently acknowledged, or any new uses and applications of other indigenous plants which may have been unduly neglected or forgotten," I purpose presenting for the *concours* proposed by that very learned Society the accompanying paper, exemplifying the great advantages I have reaped from the use of the leaves of the common holly (Ilex Aquifolium) in the treatment of intermittent fever, &c.

The unjust neglect which this indigenous shrub has experienced by its omission in the modern materiæ medicæ has for many years engaged my attention. I have also solicited the co-operation of many of my colleagues, whose conclusive observations bear testimony to the facts which I have the honour to present, in order to obtain a recompence which it is more easy anxiously to desire than actually to gain.

Of the Virtue of the Leaves of the Holly (Ilex Aquifolium) in the Treatment of Intermittent Fever.

"Gratia sic minimo magna labore venit."

I am indebted to numerous experiments, and to their successful results, for the advantage of proposing the holly as a febrifuge and succedaneum for cinchona bark.

The experience of twenty years has convinced me of the virtue of this medicine, which, administered by enlightened and intelligent men, has fulfilled all the conditions required of it to supersede the Peruvian bark in the treatment of intermittent fever.

Although it is one alone that here principally concerns us, it may not be impertinent to state that there are at least twenty-five species of holly growing in the four divisions of our globe, which form a very numerous genus: however, we cannot assign to any of these the febrifuge properties which we have observed in the indigenous holly, which grows in France and in all parts of Europe: for this reason, the species in question is the only one which has been submitted to experiment by me.

[The author here gives at some length the botanical and physical characters and history of the Ilex Aquifolium, which, as they differ not materially from accounts already published, and familiarly known to almost every one, it has been deemed advisable to omit these paragraphs in the translation, and to proceed at once to the]

Chemical analysis. We are indebted to M. Lassaigge, a zealous friend of science, for the first analysis which he undertook to discover the composition of the leaves of the holly. This analysis furnished him, viz. 1, wax; 2, chlorophylle, (green matter of the leaves;) 3, a bitter matter, which is neutral, non-crystallizable, soluble in alcohol, and undecomposable by the acids and alkalies; 4, a yellow colouring matter; 5, gum; 6, acetate of potass; 7, muriate of potass and lime; 8, supermalate of lime; 9, sulphate and phosphate of lime; 10, fibre of the wood (lignin).

The febrifuge principle appearing to me to reside in the bitter matter, it was necessary, in order to ascertain its presence, to have recourse to new processes. M. Deleschamps, an able chemist, has obtained the following results:

First process. A kilogramme of the leaves of the holly, previously dried and reduced to powder, was twice boiled, each time in five kilogrammes of water, during two hours, in a Papin's digester, to facilitate the dissolving of the bitter principle, by increasing the temperature. After the second

boiling, the residue of the powder being deprived of all taste, the liquids were mixed, filtered, and evaporated to three-fourths. On the addition of a solution of subacetate of potass, (which was added in excess,) the liquid assumed a thick viscous appearance. A solution of two ounces of subcarbonate of potass being then added, it appeared more limpid on being well stirred: this not only destroyed the viscosity which impeded the filtration, but threw down the subacetate of lead in excess. After having refiltered, half an ounce of dilute sulphuric acid was added, which caused a white precipitate. The liquid being acid, was saturated with carbonate of lime, and, being again filtered, it was evaporated to the consistence of an extract, which possessed all the bitter taste of the plant. I treated this matter with alcohol of 40°, and decanted off the clear portion, and by evaporation obtained a brown substance, attracting moisture very rapidly, having a very bitter taste, and rather an agreeable odour. I dried this product, and procured it in shining laminæ. I then treated that portion of the extract which was not dissolved by alcohol at 40°, with alcohol at 36°, and obtained by the same means a product, which only differed from the first by being of a deeper yellow colour.

Second process. The product of the decoction evaporated to the consistence of an extract, was treated with alcohol at 36°, and the spirit renewed until nothing further could be dissolved. The liquids were all then mixed and evaporated, and the product procured dried, and then put into water at the temperature of 40°. After half an hour, the liquid was filtered, and precipitated by a solution of subacetate of lead, the excess of which was thrown down by sulphuretted hydrogen. It was again filtered, and evaporated in a porcelain vessel to the consistence of an extract, which was treated with alcohol at the temperature of 36° (therm. Reaum.), and afterwards dried as in the first process.

This second process being more expensive, and less bitter principle being obtained than by the first, it is therefore not to be commended.

Third process. This consists in making an alcoholic extract of the leaves, which should be mixed with water, and afterwards treated with subacetate of lead, sulphuric acid, and carbonate of lime, and alcohol should then be added, and the product, when filtered, evaporated, and dried, gives a substance which presents the following characters, when submitted to the following different tests: The acids do not decompose it, unless the temperature be raised; it then assumes a black appearance, and disengages an empyreumatic

odour. The alkalies do not act upon it; chlorine neither changes its colour, nor its chemical nor medical properties. It is precipitated neither by the nitrate of silver, hydrochlorate of platinum, acetate of potass, nor by the oxalates of potass and ammonia. It is insoluble in ether; soluble in alcohol at 40°, equally so in alcohol at 36°, and even in warm water.

This product, which I have named Ilicine, is of a brown colour; rapidly absorbs moisture, which probably renders it non-crystallizable: heated in a platinum crucible, the ilicine gives carbon, and betrays the presence of an alkali, by restoring the blue colour of litmus paper reddened by an acid: this alkali proceeds from a salt, having potass for its base.

Results.

2 lbs. of dried leaves give of dry extract, ℥v., gr. iv.
2 lbs. . . . . give of ilicine, ℥ij., gr. xlij.
2 lbs. . . . . lose by drying, 1 lb., ℥iv.
2 lbs. of fresh leaves give of dry extract, ℥iij. ʒiv. gr. xxiv.

Medical Properties.

Those authors who have spoken of the holly consider it as possessing emollient, resolving, diuretic, and expectorant properties: few consider it as a febrifuge. Before it was employed internally, many remarked that the bruised and putrefied bark yielded a viscous substance called birdlime, and which was applied externally as a cataplasm, supposing it to have resolving or maturative qualities: with this idea, M. Chomel employed it to alleviate the pain of gout.

The root, according to many, has the same emollient and resolving properties as the bark. The decoction of the leaves, or their powder, has been praised in catarrh, pleurisy, colic, and the diseases of the urinary organs. The great Haller has recommended the juice of the leaves in icterus; and we shall perceive, in many of the observations which follow, that the alvine evacuations which were produced in some patients depended on its action on the liver, as Haller suspected when recommending it in jaundice.

I remarked, that few physicians have regarded it as a febrifuge, which admits of a simple explanation; as Durande and Reil are the only persons who have sought after a new therapeutical remedy for fevers. Those who followed them have only repeated what they had already stated, and were content to approve of a remedy whose uses still lay open to further investigation.

We should then inquire why this medicine has fallen into disuse, as Reil, in his work, asserts that he employed the

decoction and extract of the leaves of the holly frequently; and always observed that these preparations caused appetite, facilitated all the secretions and excretions, and that their most constant effect was that of increasing the transpiration of the skin. We also ask, why repeated experiments have not been made with it in cases of intermittent fever, as Reil also affirms that he has employed the holly successfully in epidemic intermittent fever; and he adds, that, after those fevers resisted the use of Peruvian bark, they yielded to that of this indigenous plant. We read in the "Botanique de Lyon," that the dried leaves of the holly, reduced to powder, given in the dose of one drachm in a glass of water, one hour before the paroxysm, frequently cut short the fever.

But all these observations, as well as those of Villars, Murray, &c., seem to have been insufficient to draw from oblivion this medicine, to which I have devoted my especial attention. My inquiries being directed in preference to the febrifuge qualities of the leaves, I omit speaking of the trials made with the berries.

I am now able to present the result of my experiments, which, being verified by enlightened and impartial physicians, demonstrate the great advantages of this medicine as a substitute for Peruvian bark; but, before doing so, it is necessary to consider the best *mode of its administration*.

The leaves of the holly may be administered in different ways: in decoction, in substance, in extract, as bitter principle called ilicine, and in enemata.

1. The *decoction* is prepared by boiling half an ounce of the freshly gathered or dried leaves in eight or ten ounces of water, which is to be boiled down to one half. This quantity is to be given in one dose, two hours before the paroxysm, and to be continued for eight or fifteen days, if the fever does not yield at the fourth or sixth dose.

2. In *substance*, the leaves are to be dried and reduced to powder, and passed through a sieve, and one or two *gros* macerated in ordinary white wine for twelve hours, or made into a decoction with water without being strained. This dose should be given two or three hours before the paroxysm, and, if not found sufficient, the quantity can be increased to three *gros*, which may be repeated four, five, six, or more times, if necessary. Dr. Constantin, of the naval hospital of Rochefort, obtained great success by administering, during the intervals of the paroxysms, one *gros* of the leaves in decoction every four hours, which was continued for two or three weeks, as required, in addition to the vinous prescription.

3. In *extract*, it is given in doses of one half to one *gros*, as a bolus or in the form of pill; or the quantity can be increased to one half, if the pertinacity of the fever should render such increase necessary.

4. As *ilicine*. This febrifuge principle, in which the bitter matter of the plant resides, should be administered in doses of six, twelve, eighteen, or twenty-four grains, in the form of pills, as least disagreeable to the patient, and the use of it continued until the disease is entirely subdued.

5. In *injection*. This mode of administration originated with Dr. Constantin, already mentioned: he recommends half an ounce of the leaves, either dry or freshly gathered, to be boiled for about a quarter of an hour, in a sufficient quantity of water to form a clyster. These injections, besides their febrifuge effects, have the accompanying advantage of producing free evacuations from the bowels, without pain or griping. Dr. SERRURIER has likewise prescribed the holly in the form of enemata, and his experience coincides with that of Dr. Constantin, both having been equally successful. Many cases furnished by this physician are embodied in this report. The clinical observations of Professor MAGENDIE have likewise furnished many conclusive facts in favor of the efficacy of this medicine, although they have not been communicated in all the detail that they deserve.

The following cases will give, I hope, a decided proof of the febrifuge action, as well as sedative powers of the leaves of the Ilex Aquifolium upon the spleen, liver, and pancreas, especially when the sensibility of these organs has been increased by the use of the cinchona and its compounds; phenomena which, I think, have only been observed by me, and upon which, nevertheless, I am of opinion that the protracted duration of intermittent fever in great part depends.

CASE I. John Louis Auscar, aged twenty, coachman, was attacked with a quotidian intermittent fever, the 26th July, 1816, which he said was caused by taking a bottle of beer when he was warm. He entered the Hôtel Dieu, and having left it without receiving any benefit by the treatment he there received, he consulted me the 4th November, 1816, (four months after the first attack of fever.) I ordered him to take one *gros* (in infusion) of the leaves of the holly, two hours before each paroxysm. The second dose cured him, within forty-eight hours. I saw him fifteen days after, and he was quite restored to health.

CASE II. A lady, of lymphatic temperament, aged eighteen, afflicted for twelve days with a double quotidian intermittent, in March, 1818. She took half a *gros* of the same powder, infused in a glass of white wine, before the paroxysm: one dose sufficed to effect a cure.

Case III. In 1820, Madame Thuillies was afflicted for six months with an intermittent fever: I advised her to try the effect of the holly-leaves, and gave her the powder as above described. Three doses of infusion, each containing one *gros* of the powder, cured her.

Case IV. Madame Cocher, a dairywoman at Ivrey, near Paris, had a quotidian intermittent, for which she was ordered, by a distinguished surgeon, cinchona bark in powder, sulphate of quinine, and wine of Seguin, twice an emetic, &c., without the least relief. She had suffered with this attack for two months and a half before she consulted me: when I saw her, her face was pale, and of a leaden hue; eyes yellow; lips discoloured; tongue yellow; appetite lost; liver enlarged and painful; inferior extremities œdematous; and she could scarcely support herself in the erect position. I ordered her two doses, of two *gros* each, of the same powder infused in wine: the first of which changed the fever to the tertian type, and somewhat restored the appetite. The second dose, which was taken the day after the next paroxysm occurred, produced four alvine evacuations, and entirely cured the fever.

Case V. Joli, aged twenty-one, a labourer at Ivrey, and living in the same district with the milkwoman whose case is detailed above, was treated in a similar way, and by the same surgeon, excepting that he was bled twice; but all without any good effect. Three doses of the powder of holly-leaves, of two *gros* each, were administered. The two first prevented the return of the paroxysms for eight days; and after the third the fever never recurred.

Case VI. M. Despoi, 55, Quai de la Rapée, afflicted with a tertian intermittent during three months, consulted me, June, 1827; he had previously taken cinchona bark in powder and the sulphate of quinine. He complained of pain in the epigastrium, which prevented him from walking. The right side was extremely painful to the touch, and I felt, between the liver and stomach, a considerable swelling, deeply seated, which I believed to be a greatly enlarged pancreas; the liver also was more voluminous than natural, and morbidly sensible. Three doses, of two *gros* each, of the holly powder steeped in white wine, restored the patient, so that he had no further relapse of the fever; and the tumour, which I decided to be an enlarged pancreas, gradually disappeared, and the liver lost its preternatural sensibility.

Case VII. Madame M., a lady living at Bondy, was attacked, while walking, in the spring of 1828, with a sudden shivering along the spinal column, which continued for two hours, and was followed by the hot dry stage, and this by the profuse sweating of ague. Similar paroxysms continued to return daily at the same hour for a month, notwithstanding the administration of five grains increased to fifteen grains of sulphate of quinine daily, of two bleedings, and the application of twenty-four leeches to the pit of the stomach. When I was consulted, the 15th June, the face was of a livid yellow colour; eyes yellow; lips blanched; pain in the region of the

liver and spleen; and œdema of the limbs. I ordered half a *gros* of the alcoholic extract of the leaves of the holly, to be taken in two doses, three hours before each paroxysm. The first dose caused the paroxysm to continue only one hour, instead of four; the second dose, taken two days after, effected a cure. These two doses produced six evacuations from the bowels.

Case VIII. M. Adlard, aged thirty and some years, was attacked, in 1828, with a tertian intermittent, when employed in a porcelain manufactory: he was ordered two grains of tartar emetic, and was bled several times. The fever still continuing, cinchona bark was given in its various forms, which not only created nausea, but irritation of the stomach. The sulphate of quinine was given in boluses, of which he took (according to his own account) 150, four of them morning and evening; did not know the quantity of quinine in each bolus; these effected an intermission of the paroxysms for four, six, and even eight days. At last quinine lost its effect. Hepatitis set in by the continued use of this salt; the least pressure in the region of the liver caused extreme pain, so that he could not endure the weight of the bedclothes, nor even of his shirt. He was advised, at the end of nine months, to leave Champeroux, which was surrounded by marshes: he came to Paris, and consulted me, two months after his arrival, the 25th February, 1829. The fever had then not diminished in the least; there was great weakness; eyes sunk, and slightly yellow; nostrils contracted; lips discoloured; skin generally of a yellow leaden colour; walks with difficulty; loss of appetite; costive and scanty evacuations from bowels; urine of a saffron colour. In this state, I ordered him two *gros* of the powdered leaves, in vinous infusion, to be taken two hours before the paroxysm, which retarded its access from six o'clock A.M. to midday. On the 26th, he had a better appetite than heretofore; but the fever returned on the 27th, at two o'clock P.M. He then took the same dose as before on the 1st March, and the paroxysm did not appear until six o'clock P.M., but was severer than the last. The liver, however, became diminished in size, and he had a greater relish for his meals. The paroxysm returned on the 3d at midnight; also the 5th. Gave him a third dose on the 9th, of two and a half gros of the powder, which completely checked the fever for six days. This dose produced four very fetid alvine evacuations; after which, the patient walked with greater facility, and the irritability of the liver decreased greatly. On the 15th and 18th, paroxysms returned, but were milder. On the 24th, took a fourth dose of three gros. On the 27th, he took the fifth and last dose, which completely subdued the fever. I saw him on the 8th July, perfectly recovered; stomach, liver, skin, &c. performing their functions normally. This was the severest case I have ever seen: I never ordered before such large doses of the Ilex Aquifolium.

I also attended the wife of this person, who had had ninety leeches at three times applied to the epigastrium, and had taken

thirty-six boluses of sulphate of quinine without success, for a quotidian intermittent fever. I saw her in 1827, and two doses, of two gros each, of this powder perfectly cured her.

Case X. M. B. was attacked with a double tertian intermittent in February 1829; and, after a delay of eight days, in order to remove a rheumatic affection, and to be more certain of my diagnosis, I ordered two doses of the watery extract of the leaves of the holly, each containing one gros, which effected a perfect cure.

Case XI. L. J. Moreau, aged nineteen, living in Paris, of a lymphatic temperament, had a paroxysm of intermittent fever the 24th August, 1829, which lasted twenty hours; also on the 26th, 28th, 31st August, and 2d September; from which time it became a perfect tertian. I ordered him, on the 16th September, two gros of the leaves in decoction, to be taken two hours before the paroxysm. This caused three evacuations from the bowels, and the paroxysm only continued six hours. The fever returned on the 18th; and on the 20th he repeated the same dose, which caused four motions, and the paroxysm continued six hours, but did not return, and he has since enjoyed the most perfect health.

Case XII. I was consulted, the 4th December last, by Madame Voix de Provis, who was affected with a quotidian intermittent for six months. One dose of two gros of the powder, given in wine, effectually removed the fever.

Here terminate the records of those cases which I have myself observed: to the distinguished physicians whose names are mentioned I am indebted for the following, which complete this monograph.

[The author next proceeds to give the details of sixty-five cases of intermittent fever, the greater number of which (forty-three cases) he has collected from the Cliniques of M. Constantin, naval surgeon at Rochefort, and from that of M. Magendie, at the Hôtel Dieu at Paris. The other cases were communicated to him by M. Louis, M. Perronaux, M. Lepredour, &c.

From this very voluminous record the translator has extracted the most important features, and reduced them to a tabular form, in which the type of fever, the person by whom treated, the medicines administered, and the results, are introduced.]

A Tabular View of Sixty-five Cases of Intermittent Fever, described by Dr. Rousseau, *in his Prize Essay on the Use of the Ilex Aquifolium in the Treatment of that Disease: with an Appendix, including those Cases treated by the Author himself, and detailed in this Memoir.*

	Type of Fever.	By whom treated.	Age.	Sex.	Length of time ill.	Duration of Treatment.	Number of Doses, and their Strength and Form.	Page in MS.
1	Quotidian *	M. Constantin	39	Male	6 days	3 days	2 doses of 8,00 in wine	31
2	—	—	20	—	8 days	10 days	1 dose of 8,00 pulv.	32
3	—	—	23	—	2 days	14 days	2 doses of ——	32
4	—	—	23	—	2 days	13 days	3 doses of ——	33
5	—	—	38	—	10 days	12 days	2 doses of ——	36
6	—	M. Lepredour		—	—	3 days	3 doses of 2 gros in powder	48
7	—	M. Gillet de S.	9	—	—	—	——	49
8	—†	M. Treand	20	Male	12 days	6 days	4 doses of 2 gros in powder	52
9	—‡	M. Serrurier	44	—	—	—	3 doses of ——	56
10	Tertian	M. Constantin	23	Male	8 days	4 days	1 dose of 8,00 of powder	31
11	—§	—	25	—	5 days	6 days	8 doses of ——	34
12	—	—	23	—	8 days	8 days	3 doses of 15 grains, decoct.	38
13	—	—	36	—	—	6 days	3 doses of 8,00 in powder	39
14	—	—	43	—	—	9 days	1 dose of ——	41
15	—	—	48	—	—	5 days	2 doses of ——	42
16	—	—	52	—	10 days	—	1 dose of ——	42
17	—	—	30	—	—	5 days	3 doses of ——	42
18	—	—	33	—	—	8 days	3 doses of ——	42
19	—‖	M. Lepredour		—	—	—	2 doses of 2 gros in powder	43
20	—¶	M. Serrurier	49	Female	—	—	5 doses of ——	53
21	Tert. dou.**	M. Treand		Male	7 days	3 days	2 doses of ——	52
22	Quartan ††	M. Quèau		Female	2mon.	4 days	1 dose of ——	30
23	—‡‡	M. Constantin	29	Male	6 days	4 days	2 doses of 8,00 in powder	33
24	—§§	—	28	—	15 days	5 days	2 doses of ——	34
25	—‖‖	—	37	—	12 —	13 —	6 doses of 2 gros in decoct.	34
26	—	—	26	—	15 —	6 days	4 doses of ——	35
27	—¶¶	—	31	—	—	10 —	3 doses of ——	35
28	—	—	26	—	12 —	12 —	4 doses of ——	36
29	—***	—	32	—	10 —	9 —	3 doses of ——	86
30	—†††	—	45	—	12 —	10 —	6 doses of ——	37
31	—‡‡‡	—	31	—	—	7 —	3 injections of 4 gros, p.	37
32	—§§§	—	34	—	6 —	10 —	3 injections of ——	37
33	—	—	23	—	10mon.	12 —	3 doses of 15 gr. of powder	38
34	—	—	25	—	—	13 —	9 injec. of ——	38
35	—	—	36	—	—	12 —	7 inject. and 2 doses in dec.	39
36	—	—	28	—	—	10 —	3 doses of 8,00 in powder	40
37	—	—	34	—	—	11 —	4 doses of ——	43
38	—	—	24	—	—	11 wks.	12 doses and 11 injections	40
39	—‖‖	M. Treand	69	Female	1 year	7 days	4 doses of 2 gros in powder	51
40	—	M. Delonnel	21	Male	24 days	6 —	2 doses of ——	67
41	—	M. St. Amande	27	—	3 wks.	8 —	6 doses of ——	82
42	Erratic¶¶¶	M. Lepredour	27	—	3 —	6 —	3 doses of 8 grains, powder	45

* Convict, as all those treated by M. Constantin.
† Was first bled and purged.
‡ Relapse after six months, cured by quinine.
§ Had frequent attacks of the same.
‖ Relapse: quinine not used, gout being present.
¶ Second attack; first cured by quinine.
** Fifth attack. †† Quinine failed. ‡‡ Second attack.
§§ Fourth attack. ‖‖ Fourth attack. ¶¶ Second attack.
*** Fourth attack. ††† Relapse.
‡‡‡ Second attack; first cured by quinine. §§§ Third attack.
‖‖‖ During the last three months it was a double quartan. ¶¶¶ Quinine failed.

Type of Fever.	By whom treated.	Age.	Sex.	Length of time ill.	Duration of Treatment.	Number of Doses, and their Strength and Form.	Page in MS.
43 Quotidian	M. Perronaux	14	Male	5 days	4 days	4 doses of 1 gros in powder	63
44 — •	M. Cargnou	47	—	14mon.	12 —	4 doses of 3 gros ——	64
45 —	M. Louis	29	—	1 —	4 —	3 doses of 2 gros ——	73
46 — †	M. Magendie	25	Female	14 days	25 —	14 doses and injections	87
47 — ‡	—	27	—	4 —	4 —	3 doses of the powder	92
48 —	—	47	—	18 —	12 —	10 doses of ——	95
49 —	—	42	—	5 wks.	4 —	3 doses of ——	97
50 —	—	60	—	3 —	11 —	9 doses of ——	101
51 —	—	38	—	3 —	2 —	1 dose of decoction	103
52 —	—	62	—	11 days	10 —	8 doses of decoct. and inject.	110
53 —	—	22	—	19 days	4 —	3 doses of ——	113
54 —	—	45	—	3 wks.	4 —	5 doses of decoction	116
55 Quot. double	—	41	—	4 —	12 —	9 doses of ——	104
56 Tertian	M. Perronaux	20	Male	10 days	6 —	3 d. of 1½ gros in powder	62
57 — ‖	M. Louis	34	—	16 —	4 —	2 doses of 2 gros in powder	71
58 — ¶	M. Arbey	20	Female	6 —	5 —	3 doses of ——	78
59 — ••	M. St. Amande	18	Male	1 year	3 —	1 dose of 1 gros in powder	83
60 —	M. Magendie	19	Female	15 days	15 —	13 doses of 2 gros and inject.	85
61 — ††	—	23	—	14 —	20 —	14 doses and injections	90
62 —	—	28	—	6 wks.	9 —	7 doses of the powder	114
63 Tert. dou. ‡‡	M. Collineau	44	—	8mon.	5 —	4 doses of 2 gros in powder	68
64 Intermitt. §§	M. Serrurier	76	Male	8 days	20 —	6 doses of 2 gros and 7 inject.	57
65 —	M. Moncourier	60	—	2mon.	8 —	6 doses of ——	75

• Quinine, &c. failed. † Left hospital on the fourth day of treatment.
‡ Injections caused copious evacuations.
§ Relapse after seven days, from exposure to cold.
‖ Was previously bled. ¶ Second attack; first cured by quinine.
•• Had many attacks, cured by quinine. †† Was exposed to a current of air.
‡‡ Quinine in large doses failed. §§ Injections caused copious evacuations.

APPENDIX.

Tabular View of CASES treated by the Author, and detailed in this Memoir.

66 Quotidian	Dr. Rousseau	20	Male	4mon.	2 days	2 doses of 1 gros in powder	17
67 Doub. quot.	—	18	Female	12 days	—	1 dose half-gr. pulv. in wine	18
68 Intermittent	—		Female	6mon.	few da.	3 doses of 1 gros in powder	18
69 Quotidian •	—		Female	10 wks.	3 days	2 doses of 2 gros —	19
70 — †	—	21	Male	—	—	3 doses of ——	20
71 Tertian §	—	55	Male	3mon.	—	3 doses of ——	20
72 Quotidian §	—		Female	1mon.	2 days	2 d. one and half gr. extract	21
73 Tertian ‖	—	30	Male	11mon.	6 wks.	5 d. 2 and 2 and half gr. pulv.	23
74 Quotidian ¶	—		Female	—	—	2 doses of 2 gros in powder	26
75 Doub. Tert.	—		Male	8 days	—	2 doses of 4 gros extract	27
76 Tertian	—	19	Male	3 wks.	4 days	2 doses of 2 gros decoction	28
77 Quotidian	—		Female	6mon.	—	1 dose of 2 gros in powder	29
78 Quotid. with Nerv. Fever	—	11	Male	5-6 w.	16 days	128 grains of Ilicine	117

• Emetics: cinchona and quinine had failed.
† Same treatment and bleeding failed.
‡ Bark and quinine failed: visceral disease.
§ Quinine grs. v. to xv. failed.
‖ Emetics, bark, and quinine failed.
¶ Thirty-six quinine boluses and ninety leeches useless.

Summary of the Sixty-five Cases given in detail in the original Manuscript.

Twenty-two cases of quotidian intermittent, principally treated by M. Constantin, of Rochfort, and M. Magendie: equally male and female. One case was fourteen months ill,

with whom quinine failed: the fever ceased by the administration of four doses, of three gros each, of the powder of the leaves of the holly, in twelve days. A second case, a female, aged twenty-five, was ten days ill; treatment continued during twenty-five days; fourteen doses, and an equal number of injections of the holly were administered. The remaining twenty cases were ill from two days to five weeks; duration of treatment varied from three to fourteen days, and the number of doses of the holly from one to ten, each of which consisted of from one to three gros of the powdered leaves.

Twenty Cases of tertian intermittent, fourteen males and six females. One case, treated by M. St. Amande, male, aged eighteen, was one year ill; one dose of the powder, containing one gros, removed the fever. A second case, (a double tertian,) female, aged forty-four, treated by M. Collineau; eight months ill; the fever ceased in five days, by four doses, of two gros each, of the powdered holly-leaves. A third case, a female, aged twenty-eight, treated by M. Magendie, was ill six weeks; the fever ceased in nine days, by seven doses of the same powder. The remaining seventeen cases, treated principally by M. Constantin and M. Magendie, were from five to sixteen days ill previous to treatment; duration of treatment varied from three to twenty days, and the doses of the powder from two to fourteen, each containing from one to three gros.

Twenty Cases of quartan intermittent. One case treated by M. Constantin, male, aged twenty-three, was ten months ill, and was cured in twelve days, by three doses of the powdered leaves. A second case, of a female, aged sixty-nine, treated by M. Triand, was one year ill, during the last three months of which the type of the fever changed to a double quartan, which was cured in seven days, by four doses, of two gros each, of the holly. A third case, of a male, aged twenty-four, treated by M. Constantin; period of previous illness not stated; duration of treatment, ten weeks; nine doses of the decoction of the leaves of the holly were given, each dose consisting of two glasses, the first two weeks; during the third week, three doses of the powder in wine were given. By this treatment the paroxysms became milder, though not less frequent; and during the remaining seven weeks, eleven injections of a decoction of holly-leaves (only) were administered, which effectually removed the fever.

The other seventeen cases, sixteen male and one female, principally treated by M. Constantin; periods of illness varied from six days to two months; duration of treatment, from four to thirteen days; doses from one to six of the

powdered leaves. In three of those cases, injections of a decoction of the leaves of the holly were only employed, with an equally good effect.

The other three cases of the sixty-five: one of an erratic type, male, aged twenty-seven; three weeks ill; quinine failed, and was cured in six days by three doses of the holly. The type of the second and third cases is not mentioned; males: one, aged seventy-six, was cured in twenty days, by six doses and seven injections of the holly; the other, aged sixty, two months ill, cured by six doses of the holly, in eight days.

Conspectus of some of the most remarkable Cases, selected from the Sixty-five detailed at length in the original Essay.

Of the sixty-five cases presented, there are some which merit a more particular notice.

There are four cases given in which quinine, and the other preparations of cinchona bark, failed to produce any change in the fever. The first is that of a female, who during two months was treated for a quartan, by pills of sulphate of quinine and injections of the decoction of bark, without the slightest effect: one dose of the pulvis ilicis, of two gros, was sufficient to check completely the fever. The second in a man, treated during three weeks for an erratic intermittent fever, by cinchona and its preparations, which failed to produce its ordinary effects: three doses of the pulvis ilicis sufficed to effect a cure. The third case, that of a man aged forty-seven, afflicted with a quotidian for fourteen months, during which time he was treated by several persons, some of whom tried the various preparations of cinchona, in the very largest doses: four doses, of three gros each, of the pulvis ilicis effected the long-sought-for cure. The fourth case, that of a female aged forty-four, during eight months was afflicted with a double tertian, for which she took quinine without effect: four doses, of two gros each, of the holly sufficed to effect the cure.

Three other cases deserve notice, owing to the duration of the illness and the comparative smallness of the quantity of the holly necessary to procure a restoration to health. The first, that of a man aged twenty-three, suffering for ten months under a quartan intermittent, which ceased in twelve days after three doses of the ilex. The second that of a female, aged sixty-nine, afflicted during a year with a quartan; four doses of the ilex, of two gros each, effected a cure. The third, a case of tertian intermittent, of one year's standing, which one dose of one gros of the powdered leaves of the ilex effectually removed.

There are six cases (two quotidian, three tertian, one quartan,) cured by one dose, of two or three gros each, of the powder of the holly.

There are ten cases (three quotidian, four tertian, three quartan,) cured by two doses of the same.

There are twenty cases (seven quotidian, seven tertian, six quartan,) cured by three doses of the same.

There are eight cases (three quotidian, one tertian, four quartan,) cured by four doses of the same very valuable medicine.

Case of Nervous Fever, complicated with daily Paroxysms of Ague, treated successfully by the author of this Memoir, by the use of Ilicine, a substance which he discovered in May 1831.

Bataille, a youth, aged eleven years, of a nervous habit, residing in Paris for the prosecution of his studies, was entered on the sick list on the 1st of June, 1831. This lad complained of a violent headach, cough, and much heat of the abdomen; but these symptoms were not thought sufficient to confine him to his room, and his medical attendant permitted him to rejoin his class. Being thus neglected, the fever increased in severity, and became manifestly of a typhoid character. On the 27th of June, it was complicated with an attack of ague, which came on about four or five o'clock in the afternoon; the paroxysm lasted two hours and a half. On the 28th the attack returned at eight in the evening; and on the 29th at ten in the forenoon.

I saw the patient at four P.M. in consultation with my colleague Dr. Longes-Villermay. The following were the most prominent symptoms: weakness of the back, much prostration of strength, and general apathy; pupils much dilated, and very little contractile; teeth slightly covered with sordes; mucous rattle in the upper lobes of both lungs; abdomen very hot; urine scanty, and of a red colour; pulse 110 to 120 per minute.

The paroxysms continued to recur daily to the 9th of July, with equal severity, and always commencing with coldness of the feet. Dr. Longes-Villermay proposed the administration of quinine, but I was anxious to employ the febrifuge principle of the holly-leaves, which I had lately discovered, and on Saturday, 9th July, at eight P.M. a pill containing six grains of ilicine was given to the boy, who had a quiet night; he also took at the same time some liquorice powder.

July 10th, at six P.M. The six-grain ilicine pill was repeated; the shivering fit, however, came on, lasting two hours and a half, and the hot stage equalled it in length.

11th. Medicines repeated. The cold stage of the intermittent commenced at two o'clock, and lasted but two hours. The hot stage, however, did not terminate till a quarter to eight in the evening.

12th. Skin more supple, and the patient appears better; but the stupor continues as at first. Ilicine repeated. The paroxysm of fever occurred at eleven A.M., the cold stage lasting for three quarters of an hour: he however seemed less sleepy than on the 11th. At noon he took another six-grain ilicine pill: yet he still had return of coldness in the feet about half-past seven P.M., but it was not followed by sweating.

13th. Two ilicine pills given at six A.M. Coldness of feet came on at half-past nine, and lasted till eleven A.M.; this was followed by intense heat for about an hour, which then gave way to perspiration, and the paroxysm (during which he had a yellow fetid evacuation,) terminated at a quarter-past four P.M.

14th. Medicines repeated. Access of cold stage at half-past ten, lasting only half the time of yesterday's attack, and followed likewise by a hot stage of diminished violence: during his waking intervals he asked for food.

15th. Same medicines. Paroxysm rather longer in cold and hot stages, but terminated by a more profuse perspiration. He slept the greater part of the day.

16th. Took only one pill of ilicine. Paroxysm did not recur till nearly one P.M., and the hot stage was scarcely sensible.

17th. Twelve grains of ilicine given in two pills. Paroxysm delayed till three P.M., and of much less severity.

18th. Twenty-four grains of ilicine given in four pills, beginning at six A.M., and repeating the dose of one pill every three hours. A warm bath likewise ordered.

The same medicines were continued during four days longer, but the paroxysm getting weaker and weaker for two days, and none at all occurring on the 21st or 22d, on the 23d the ilicine was discontinued; and on the 6th of August I saw him for the last time, when he was completely restored to health.

Note. One hundred and ninety-eight grains of ilicine were given to this patient, besides which cold lotions were applied to the head, two blisters for a short time to each side of the chest, and to the insides of the thighs; warm fomentations to the abdomen; two warm baths, clysters, pediluvia, and hot cataplasms to the feet. Internally, besides the ilicine, he took only emollient ptisans, gum syrup, capillaire, &c. The above detail shews that this young patient was cured by the use of ilicine, without any recourse being had to bark.

Conclusion. The end of our labours, for the present, has arrived, and assisted as we have been by physicians, the results of whose practice we have already given, we may draw the following conclusions:

1st. That the powder of holly-leaves is, in the cure of disease, a valuable medicine, and that nature, always kind, seems to have designed it especially for that unhappy class of patients which fortune often permits not to consult a physician,

and still more frequently prevents from purchasing the medicines he prescribes.

2d. The hospitals, both civil and military, will equally profit by its introduction; and government will find in this febrifuge a great diminution of expense with regard to medicines; as it may be had for the trouble of gathering, and the cost of making those preparations that I have described will be very trifling.

It has been a great gratification to me to have been able to collect so many testimonies as I have cited of its efficacy, and which have been afforded me by the learned physicians whose names have been already mentioned; and it would have increased this gratification could I have added those furnished by Dr. Reynaud, professor and physician at Toulon; Dr. Clement, physician to the Hôpital de la Pitie; Dr. Gaimard, professor and physician at Rochefort; Doctors Serre and Teul, members of the Faculty of Montpellier. But my numerous avocations have prevented me taking notice of the beneficial results which they have obtained, and which have united with others to recommend the holly for trial; and their recommendation has not been made in vain. To all I would return my thanks: they have favored my researches, and as, on the one hand, they have assisted with me to enrich our therapeutic catalogues by the addition of a medicine, the properties of which have been discovered again; so, on the other, they have offered to humanity a means, at little cost, to cure those fevers which often yield not at all, or with much difficulty, to the use of bark persevered in for a great length of time; a course so lengthened as often to involve serious disorganization of the liver, independently of the consideration of the high price of the drug, which the poor are unable to afford: a double misfortune this, but one that cannot be objected to the use of the Holly *and its preparations.*

Note. Dr. Rousseau's paper was accompanied with specimens of the various preparations of holly in powder, extract, &c., and also with a bottle of the ilicine; all which, together with the original manuscripts, are deposited in the collection of the Medico-Botanical Society, and may be seen on application to the Librarian or Conservator.

JAMAICA DOGWOOD.

On the Medical Properties of the Piscidia Erythrina, or Jamaica Dogwood. By William Hamilton, M.B., Corresponding Member of the Medico-Botanical Society.

The Jamaica dogwood tree, or Piscidia Erythrina, is a small branching tree, of from fifteen to twenty feet in height, common in the low grounds near the sea, in most of the West India islands, and every where by the road sides (according to Jacquin) in Jamaica, where it flowers, according to my observations, in the months of March, April, and May, during which it is wholly destitute of leaves, which rarely appear before the period of inflorescence has passed. It belongs to the Linnæan class and order of Diadelphia Decandria, and is distinguished from other plants of the same class and order by its acute stigma, and four-winged legume, enclosing a number of compressed, oblongo-reniform seeds. Its leaves, which are periodically deciduous, are unequally pinnated, with ovate, very entire, pubescent leaflets. Towards the middle or latter end of March, thyrsoidal racemes of white papilionaceous flowers, of rather a large size, wholly destitute of smell, make their appearance at the extremities of the younger branches, and continue progressively expanding till about the middle of May, when they are succeeded by clusters of linear compressed legumes, furnished with four membranaceous, longitudinal wings, greatly exceeding the legume itself in breadth: the legume consists of one cell, nearly united between the seeds, so as to appear to a careless observer like a many-celled legume. The seeds, which I have always observed to be very much compressed, and of an oblong reniform shape, Swartz describes as roundish.

According to Jacquin, the leaves and branches of this tree, bruised and mixed with water, intoxicate the fish it contains, making them swim blindly on the surface, so as to become an easy prey to the fisherman: his words are, "Folia ramulique contusa, et aquis injecta, pisces inebriant, ut aquis supernatent, manuque capi possint: quam virtutem cum multis aliis plantis Americanis communem hæc arbor possidet." Among the other West Indian plants to which he refers in the concluding part of the sentence as sharing this property of intoxicating fish, are the Jacquinia Armillaris, called by the Spaniards *el Barbasco*, by the French *Bois bracelets*, and by the English *piscrust*, a low but ornamental shrub common on the seacoast in most of the Antilles, and

an ingredient in one of the most deadly of the toxiques of South America; the Galega toxicaria, and a plant of which I have never been able to obtain any true account, which the Carribs of St. Vincent were said to employ, in a somewhat different manner, for the same purpose, under the name of *Wonga root*. From the similarity of the effect produced by all these various substances on the animal economy, it is not unreasonable to conjecture that this uniformity of action arises from the uniform presence of the same active principle in each, analogous to the morphine, quinine, tannin, &c., which are found to pervade a variety of dissimilar plants, communicating to them, however, a similarity of properties more or less decided according to the degree of concentration in which it exists in each. Hence it might be worth while to subject them all to the test of medical experiment, in order to determine how far their active properties are capable of being rendered subservient to the wants of mankind.

In the only instance in which I have had an opportunity of witnessing the powerful effect of the dogwood as auxiliary to the fisherman, it was the bark of the roots, and not the leaves and young branches, which were employed. This bark was gathered at the season of flowering, and at the lunar period at which, according to the well-ascertained law of intratropical vegetation, the juices of the plant were in the highest state of activity, namely, the full moon in April. To those whose acquaintance with the phenomena of vegetable life is limited to the temperate zone, the idea of lunar influence upon the circulation of the sap may appear more visionary than correct; but to those who have resided for any time within the tropics, the fact is perfectly familiar, and the importance of strict attention to it fully known: the influence of the lunar phases on the sap in trees is such as to render the strictest attention to the state of the moon at the time of felling timber necessary, if the timber is desired to be durable. The West Indies abound in the most valuable hard woods, such as the Zygophyllum arboreum, or Guayacan tree, which, if cut between the full and new moon, when the sap is dormant or descending, are almost indestructible; but which, if felled between the new and full moon, when the sap has begun to mount, will infallibly begin to decay before the expiration of ten years, or even a shorter period. Even the fact alluded to by the Roman poet of the influence of the phases of the moon on animal life, where he says,

"Lubrica nascentes implent conchylia Lunæ,"

is perfectly familiar to the West India planters, who never

admit the Echini, or sea eggs, a well-known West Indian delicacy, to their tables, except when the moon is at the full, experience having taught them that this delicate shellfish improves with the increasing, and goes out of season with the waning moon. This digression may appear foreign to my purpose; but will, I trust, appear excusable when I state that, from the disappointments I have myself experienced from neglecting a due attention to what I was at first disposed to regard as a vulgar error, I have been fully convinced that the activity or inertness of the bark of the Piscidia depends as much upon the season of the year and the period of the moon at which it has been gathered, as that of digitalis, colchicum, or any of the other valuable remedies with which the Flora of Britain presents us.

The bark of the dogwood root, collected at the period I have stated, previous to being used for fish poisoning, as the sport is called, is macerated with the lees of the stillhouse, and temper or quicklime, and put into baskets of a convenient size, with one of which each of the fishermen is provided: thus equipped, one or more of them embark in one or more boats, according to the size of the bay selected for the sport, and, pushing to a sufficient distance from the shore, they hold their baskets over the side of the boat in the water, which they continue to agitate with their baskets till the whole of their contents is washed out, and the water has become impregnated with the intoxicating preparation, which happens sooner and to a wider or narrower extent according to the number of washers and boats, and the dimensions of the bay. In a little time the smaller fish are seen floating, apparently dead, upon the surface of the water, while the larger fish, capable of longer resisting the stupifying influence of the medicated water, swim wildly about, raising their heads above the narcotic fluid, and striving as it were to breathe a purer atmosphere: these surrender themselves an easy prey to the persons in the boats, who catch them with their hands as they float by, perfectly unresisting; if thrown, immediately after being taken, into fresh and pure water, there is no doubt that, with the exception perhaps of the smaller fry, they would soon recover. Neither their flavour nor wholesomeness is in the least impaired by the manner in which they have been taken; but, from the number which are uselessly destroyed by this mode of taking fish, poisoning has been prohibited in many of our islands. The manner in which the Wonga root was used by the Carribs differs in appearance from this, which I myself witnessed, but in principle is indisputably the same: they stuffed, as I was informed,

the bellies of several small fish with a preparation of the root, and threw the fish thus doctored overboard, when they were devoured with avidity by the larger fish: these latter being stupified by the dose, became, in their turn, the prey of the icthyophagists in the boats.

Struck with the singular and decided effect of the dogwood bark upon the fish, I was induced to investigate its properties as an internal remedy upon the human frame, and commenced, accordingly, a series of experiments upon myself with the bark, in substance, in infusion, in decoction, and in tincture; which last I found to be the only efficient and practicable mode of exhibition, since the active constituent appears to be a resin insoluble in any thing but rectified spirit: hence the necessity of the stillhouse lees, which contain alcohol in a highly concentrated state, in combination with a powerful and deleterious empyreumatic oil, in the preparation of the bark for fish poisoning.

My tincture was prepared by macerating one ounce of the coarsely powdered bark in twelve ounces, by measure, of rectified spirit, which I had brought with me from England, for twenty-four hours, and straining. The tincture thus obtained was of a fine honey yellow, and appeared to be fully impregnated with the active principle of the bark: it had nothing striking or offensive in its taste or smell, but, on being dropped into water, it communicated to it an opaline or milky hue, evidently from the separation of a resin; for, on suffering some of the undiluted tincture to evaporate in a glass, the sides were encrusted with a white film of the resin which remained behind. Labouring at the time under a severe toothach, which seemed to set sleep at defiance, I took at bedtime a drachm measure of this tincture in a tumbler of cold water, and lay down, with the uncorked phial in the one hand and the empty glass in the other, to speculate upon the manner of its operation on the system. The dose was by no means disagreeable to take, nor was its action on the mouth and throat unpleasant, like that of the bark in substance, which irritated the fauces like the Daphne mezereum or the croton oil; but, soon after swallowing the dose, I became sensible of a burning sensation in the epigastric region, spreading rapidly to the surface, and terminating in a copious diaphoresis, in the midst of which I was surprised by a sleep so profound that I was utterly unconscious of existence from about eight o'clock at night till eight the following morning, when I awoke free from pain of every description, and found myself still grasping the uncorked phial in one hand, from which not a drop had been spilled, and the empty glass in

the other. No unpleasant sensation followed, as is usually the case after opiates, from the exhibition of what was perhaps a needlessly large dose; nor did a friend, whom, though in perfect health, I persuaded to repeat my experiment in his own, suffer the slightest inconvenience from an equally full dose: his only observation was, that he never had slept so sound in his life as he did that night. I next tried its efficacy as a topical application in cases of carious teeth, introducing a pledget of cotton impregnated with the tincture into the cavity, and never knew an instance of a return of pain after this application. I was next desirous of comparing its effects upon animalculæ in water with those of the tincture of opium: for this purpose I took, in two separate wine-glasses, equal quantities by measure of water, filled with the lively young of the mosquito, adding to the water in one glass a sufficient number of drops of the Tinctura opii to stupify the animalculæ, which fell in a mass to the bottom; I then dropped into the other an equal number of drops of the Tinctura Piscidiæ, with a similar result. Next, taking the first glass, and carefully decanting the water without disturbing the insensible mass of animalculæ, I poured upon them fresh portions of pure water, previously filtered, in order to prevent confusion; upon which they revived, and swam about as actively as if nothing had happened. I treated those in the glass to which the dogwood tincture had been added, but without the slightest effect: the most frequently repeated affusions of pure water were not of the least avail; the animalculæ were truly dead, and thus furnished a conclusive proof of the superior potency of the dogwood over the opium tincture, in equal quantities. Experiments are yet wanting to determine the minimum doses requisite in both cases, and these it were much to be desired to have instituted by some medical practitioner resident in the West Indies; taking care, however, to employ bark gathered about the full moon in April, when the plant is in flower, and the best rectified spirits, or even pure alcohol, in his experiments. An inattention to these cautions will completely defeat the object of the experiments, and, in place of obtaining an active and valuable medicinal preparation, he will obtain one perfectly worthless and inoperative.

It were also to be wished that a quantity of the bark, gathered at the proper season, and carefully dried, might be sent to this country, accompanied by a bottle of the tincture prepared upon the spot, and carefully secured against the decomposing influence of light, heat, and air, for the purpose of enabling practitioners here to determine whether the me-

dical virtues of the bark or the tincture at least impaired by keeping and transportation, and whether the Piscidia is an article adapted for supplying the place of the opium of the Levant in the pharmaceutical preparations of this country.

It might also be desirable to institute a set of comparative experiments upon the properties of the bark and leaves of the young branches, which Jacquin speaks of as being employed to intoxicate fish; as well as upon the bark both of the roots and branches of the Jacquinia armillaris, and other plants employed for a similar purpose. In order to increase the utility of these experiments, the substance operated upon should be gathered at different seasons of the year, at different states of the moon, and in different stages of the growth of the plant, accurately noting and distinguishing the various results.

It is also of importance to determine, by careful analysis, the uniformity or the dissimilarity of the principle upon which the medical properties of these various substances depend, the proportion in which it exists in each, and the circumstances under which it is to be found in the greatest abundance and highest perfection; as likewise the precautions requisite for its preservation from decomposition.

From not being sufficiently alive to all these particulars at the time, when a residence upon the spot afforded me an opportunity of prosecuting the investigation with success, my experiments have been incomplete, and their results unsatisfactory. A letter on the subject, which I published in Nicholson's Journal, in October 1812, contains several errors, which subsequent experience has enabled me partially to correct; and the supply of bark noticed in that letter as sent to Mr. Carlisle for experiment, having been gathered at an improper time (in the month of June), proved inert, as I myself experienced, from having prepared some tincture from a portion which I retained for the purpose, was no doubt the reason why I never heard from that gentleman on the subject.

As an object equally interesting in a philosophical and a medical point of view, and as tending to transfer a most lucrative branch of commerce from Turkey to our own possessions, the Piscidia Erythryna is well entitled to the attention of the Medico-Botanical Society, to whom I now resign its further investigation, after having detailed my own imperfect experiments, and their result.

AUSTRALIAN PLANTS.

Observations on some Medicinal Products of Australian Plants. By Mr. Mudie.

The novel and peculiar botany of the great southern continent of Australia has not been examined so minutely, with reference to the additions that it may make to the materials of the healing art, as might, from its importance, be expected. Several causes conspire to produce this; of these, one is general, and applies to all newly-discovered countries alike, and others arise from the peculiarities of that particular country. The vast improvements which were made in chemistry, more especially during the last century, had a natural tendency to mineralize the Pharmacopœia, and to take off the attention of inquiring minds from the medical properties of vegetables. It is not easy to say how much has been gained on the one side or lost on the other; but that there has been loss, is certain; and those who wish that the resources of all the kingdoms of nature should be equally open to man cannot fail to regard, in the most grateful and favorable manner, the labours of the Society instituted for the express purpose of doing justice to the medical qualities of plants.

The peculiar causes are to be found partly in the limited knowledge that we have of Australia, partly in the dispersion of its vegetables, partly in their uniformity, and partly in the ease with which the colonies are supplied with medicines from the mother country. There is another cause, the ignorance of the natives when first visited. It does not appear that their medicines extended beyond chewed or pounded grass, a poultice of mud, or fomentation produced by the application of a broiled fish. Of course, they could not point out medicinal plants to the European visitors; while these have hitherto been too constantly occupied in erecting habitations and finding food, for investigating the virtues of plants with that patience and nicety which a subject so very recondite demands.

The principal Australian substances which present themselves to the inquiries of the medical botanist, are chiefly gums, or resins, of some description or other, and oils. The oils are chiefly obtained from the genus Melaleuca, the species of which are very numerous, and some of them are understood to yield an oil resembling in its virtues the cajeput oil of the south-east of Asia. The gums and resins are chiefly obtained from the stem of Xanthorrhœa, and from exudations upon the bark of Acacia and Eucalyptus. The

latter is a very abundant genus, and the gum which it affords is astringent, like kino or myrrh; while that of the Acacia is more mucilaginous, and approaches nearer to gum arabic or the gums of the genus Prunus, as common in this country. One species of Eucalyptus affords a substance, of which the medicinal properties have been tried in Australia, and which, should it be found to suffer no injury or decomposition during the voyage, might materially reduce the price of manna, which still retains its rank as a medicine.

Until the substance itself, which appears rather difficult to preserve, be laid before the Society for their examination and decision, it may not be altogether useless to offer a few notes on the plant, as even that is but imperfectly known, and has not, it is believed, been figured or described in any scientific work. The following are the characters, and a few points in the description:

Generic character of Eucalyptus. Calyx superus, persistens, truncatus ante anthesin tectus. Operculo integerrimo, deciduo. Corolla nulla. Capsula quadrilocularis, apice dehiscens, polysperma.

Natural order: Myrtaceæ.

Specific name: Eucalyptus mannifera. (Manna gum tree.)

Specific character: Operculo hemisphærico acutiusculo, umbellis axillaribus terminalibusve 4-6 floris, cortice albocinereo.

The principal habitat of this tree is upon the elevated downs into which the Blue Mountains subside, and upon the adjoining slopes. It grows to the height of from thirty to forty feet, of irregular growth, and having a number of slender branches. As is the case with almost all the genus, the leaves, which are simple, lanceolate, and entire, are placed vertically, by a peculiar twist of the footstalk.

From the accounts given of it, it does not appear that the manna produced by this Eucalyptus is very different from that yielded by the Fraxinus, on the coast of the Mediterranean; though, as common report describes it as having less of the nauseous taste, it may be less efficient as a medicine. Like the manna of Europe, it is reported to contain a saccharine and a mucous ingredient, both of which are easily soluble in water, and partially so likewise in the atmosphere, when moist. It obviously arises from a rupture in the cortical vessels of the tree, produced not by the puncture of insects, but by atmospheric action, as it is produced only in the dry season, and the quantity varies with the degree and duration of the drought.

Toward the close of a long dry season, it is found so abun-

dant on the ground under the trees, that several pounds may be collected by one person in a few minutes; but when rain begins to fall, it melts, and disappears almost as rapidly as snow.

It is worthy of remark, that this substance, manna, which is reported as being so similar, as afforded by the Ash of Europe and the Eucalyptus of Australia, and which has not been found, possessing the same qualities, upon any other species of plant, should yet appear to be an exudation of two genera which differ so much in every other respect, and are indigenous only in countries which are distant from each other by nearly half the circumference of the globe; and it deserves further notice, as being one of the few instances of near coincidence in a substance where most of the productions of nature are so dissimilar.

ANCIENT PLANTS OF EGYPT.

A Dissertation on some ancient Plants of Egypt. By M. Bonastre, Corresponding Member of the Medico-Botanical Society of London. Translated from the French by G. G. Sigmond, M.D., Secretary.

Every thing which tends to recall to our recollection the sciences or the arts of ancient Egypt is sure to excite at the present day, in the minds of the most enlightened men, the highest esteem for its former inhabitants.

Since the important labours of Dr. Young upon hieroglyphics, and the learned discovery of M. Champollion the younger, upon the interpretation of the hieroglyphic system of ancient Egypt, the history of that country daily acquires a higher degree of interest. There exists, nevertheless, a branch of natural science highly essential, upon which we have but a very imperfect idea, and that part is the botany of ancient Egypt. The Medico-Botanical Society of London having honoured me with the title of corresponding member, I have thought it my duty, as an expression of my gratitude, to transmit a succinct memoir upon some vegetables found in the interior of the coffins of Egyptian mummies of the highest antiquity. I accompany this memoir with some drawings which have been taken from nature; I also send some ancient fruit.

The first is the fruit of the Mimusops, from μιμους and οφις, *monkey face*: Octandria Monogynia: family Saponaceæ of Jussieu.

This fruit is often met with in Egyptian tombs, conjointly with the fig Sycamore, enclosed in a little basket variously coloured. The Mimusops Elengi is a proof of the great vicissitudes to which Egypt has been exposed; for this vegetable has entirely disappeared from the soil. No botanical work yet published upon that celebrated country makes mention of the Mimusops Elengi; and I have in vain consulted the Flora of Palestine, by Haselquist, that of Egypt by Prosper Alpinus, or that of Arabia by Forskhal, or the illustration of the Flora of Egypt by Delile: none of these works indicate that the Elengi now actually exists in Egypt. The Mimusops is only found in the island of Amboine, and some of the isles of the Indian Ocean. Its flowers exhale a most agreeable odour, which gives much pleasure to the females of the country, who perfume their apartments with it.

No. 2. *The Fruit Diospyros Lotus. Polygamia Diœcia Plaqueminier; the Lotus.*

The fruit of the Diospyros does not form part of the Egyptian collection in the museum of the Louvre. It has been recently discovered by M. Passa-Lacqua, and now constitutes a part of the Berlin museum. M. Kunth, a distinguished botanist, has decided that this fruit belongs to the genus Diospyros, a species of lotus, which, I believe, modern botanists refer to the genus Celtis of Theophrastus.

No. 3. *Myrobalan d'Egypte*, of Rauwolf; *Balanites Egyptiaca*, Delille, Fl. Egypte; *Xymenia Egyptiaca*, Desfontaines; *El Eylyg*, of the Arabs of Fazoql; *El Ka*, of the Heathens. *Decandria Monog. Terebintaceæ.*

This ancient fruit was discovered in a little votive basket, which had served to contain offerings to the gods of Egypt, and it is frequently found in the coffins of mummies. This Myrobalan is furnished with a sort of spongy bark, more or less thick; the pellicle which covers it in its state of antiquity is of a red colour, sometimes shadowed with violet.

The stone is marked longitudinally, the sides forming five to six rather saliant angles; the shell is rather thick; the interior of the shell is filled by a kernel of a reddish brown colour, containing a quantity of very fat oil, black, rancid, and excessively acrid. The most marked character of this Myrobalan of Egypt, and which distinguishes it from all the other species, is a kind of spongy circle, placed at the point of insertion of the pedunculus, and which surrounds this organ like a little crown.

My investigation was directed to a very remarkable circumstance, which was, that the little basket that contained the Myrobalan, contained also Myrrha and Bdellium, in large fragments. Is this rencontre the effect of chance? or is it an indirect indication that Myrrha and Bdellium are produced from a vegetable of this genus? And what contributes to add some weight to this supposition is, that several druggists and apothecaries of my acquaintance have frequently brought me the nuts of the Balanites, which they had found in cases of Bdellium, and which I have also myself collected, in a similar way, among some recently imported.

My opinion on the Tree that produces the Myrrha and Bdellium.

Myrrha and bdellium are often found among the substances that served for the process of embalming the ancient Egyptians; and balanites is found also among them. I have sought to explain the origin of the word Myrobalanus, and I

have found that it was formed from two Greek words, Μυρρα, *myrrh*, a perfume, and βάλανος, *fructus-glans*, fruit; as if they had said, fruit or acorn of the tree that produces the myrrh, or perfume.*

Theophrastus, book ix. chap. iv., informs us that the myrrh tree was certainly thorny: φλοίον ακανθιώδη και ὀυ λεῖον. Now the Balanistes was thorny also.

The opinion of Bruce, who attributes the myrrh to a species of Mimosa or Acacia, has long been looked upon as an error, from the circumstance, as Dr. Duncan very judiciously remarks, in the Edinburgh New Dispensatory, that mimosas furnish but simple gum, and not the gum resin.

Ehrenberg announces that he has found, both in Nubia and Arabia, a shrub from which he has frequently collected myrrh, similar to the myrrh of commerce.

Nees von Esenbeck has drawn this shrub from the specimens introduced by Ehrenberg, and which present the generic features of Balsamodendrum, or the Amyris of Linnæus. Nees calls it the *Balsamodendrum Myrrha.*

But I shall on this subject take the liberty of making an observation similar to that of Dr. Duncan's. The Amyris Opobalsamum, or, as it would be better to call it, the Gilead Balsamodendrum, will be found, on analysis, to produce but pure resin; that is to say, resins or bastard balms, which are perfectly soluble in alcohol and ether, and which do not contain more gum than the produce of the mimosas would resin. Besides, we know, from Pliny and De Thevenot, that the trees which produce the myrrh and the bdellium were thorny, and that they grew in the same wood.

I have analysed a new species of myrrh that has been lately imported, and find that it is composed of several principles, as follow:

Analysis of a new Species of the Myrrh of Commerce.

	Parts.
Gum, soluble	50
——, insoluble	
Rosin, soluble, and subresin .	38
Oil, volatile, fluid	3
A bitter extract, non-resinous .	4
Acid, not determined	
Salt, potass base	5
——— chalk	
Silica, adhering only	
	100

* The most part of the other species of the fruit Myrobalanus should have a similar etymology.

This species of myrrh does not differ much in its constituent parts from the ancient myrrh of Troglodytia; but a very important remark, and one first made by myself, is that real myrrh turns red, and even blue, on coming in contact with nitric acid, placed under certain circumstances, which does not happen with the new species.

We are no more acquainted with the tree that produces the myrrh, than we are with the tree that produces the bdellium; but having been frequently struck with the repeated presence of the nuts of the Balanistes Egyptiaca with myrrh and bdellium in ancient monuments, and especially in some cases of bdellium recently imported into France, I have no difficulty in supposing that these balanistes may furnish one or the other of these two resinous gums. However, I do not lean exclusively to this opinion; and, as the tree is thorny according to Theophrastus, the presence of the fruit of the balanistes may be accounted for by supposing it to have fallen from some neighbouring tree, at the moment the Arabs were collecting the crops of myrrh and of bdellium.

I relate this circumstance to prove to the Medico-Botanical Society of London that I have already occupied myself with the proposed question. I will also add, that on the departure for Egypt, in 1829, of the commission of French savans, I gave the necessary instructions for procuring a specimen of the tree that produces the real myrrh; but the labours of this commission having been directed to objects of antiquity of quite another nature, I have not been able to obtain the information. On the other hand, the French savans ascended the Nile only as far as the second cataract; but it is in a much higher latitude, in a country much more dangerous to traverse, that the tree grows which produces the real myrrh. I possess on this subject some very circumstantial details.

No. 4 is the *Fruit of the Rhamnus Lotus* of the famed tree of the *Lotophagi*.

The fruit of which, sweet as honey, had on foreigners the effect of banishing the regret they felt for their country. This fruit, as is well known, is a species of the Jujube tree, Ziziphus Lotus, or may be that of Nabeca, which has an extraordinary sweet taste: it is originally from Africa. The nut is hard, and rather of an elongated shape; the kernel has become black, through the lapse of ages; its resemblance is perfect. This species of lotos, Λωτοφαγον ἐνδρον ζ, was found in a small votive basket, full of offerings.

No. 5. Fruit of the Pine, Pinus Pinea.

It was discovered, as well as a cone of cedar of Lebanon,

(Cedrus Lebani,) in the catacomb of Thebes. These two fruits form a part of the Egyptian museum at Paris: they are the only two of the species that exist in an antique state.

No. 6, are *Seeds of the Lepdium;* λεπιδιον of Dioscor.

No. 7. *The Grain or Seed of Mimusops Elengi.*

No. 8. *Corn; Triticum Æstivium;* πυρας of Homer.

This corn is a little better preserved, and was discovered in a vase of red clay, which was enclosed in the tomb of an agriculturist.

No. 9. *Barley; Hordeum distichum;* κριθη, (from the same tomb.)

No. 10. *Raisins; Vitis vinifera,* in a high state of preservation.

No. 11. *Remains of a Crown or Garland,* which I shall call "*Demotique,*" or *Popular.*

This garland was generally formed of leaves of some plant, the genus of which it is difficult to determine, but it has some relation to Unona Æthiopica. The flowers are those of the flowery capitules of the Mimosa nilotica. This kind of garland encircled often the bodies of certain mummies from head to foot.

No. 12. *Date,* of the *Phœnix Dactylifera.*

No. 13. *Arequier,* or *Fruit of a new Species of the Genus Areca;*

Called Areca Pane Lacquæ by M. Kunth, the botanist: the living original is unknown.

No. 14. *Lentilles de Peluse; Lens Pelusiaca.*

This is the far-famed vegetable which is thought to be a lineal descendant of the lentils, for a plate of which Esau sold his birthright to Jacob. These lentils are of a much smaller species than those at present used in France.

The lentils of Pelusium are at present cultivated in the environs of this Egyptian city, in the neighbourhood of that branch of the Nile called Pelusiad, and from which the species derives its name. This vegetable is extremely difficult to naturalize in France. I send some to Mr. Humphry Gibbs, in order to make the experiment of raising them in England; an experiment, the result of which I request he will communicate to me at a future period.

No. 15. *Another Leguminous Seed.*

This seed, which I lately discovered in a small vase of clay, is extremely rare. I have not been able to determine its species: whether it is a Lathyrus, a Cicercula, or a species of Trigonella, I am ignorant. This seed is smooth, be-

cause it is deprived of the pellicle that surrounded it; it is of an iron red colour.

Such are the objects of antiquity, the collection of which I request the Medico-Botanical Society of London to accept as a mark of my esteem and my gratitude.

I have the honour to be, with the most profound respect, your very obedient, humble servant.

(Signed) BONASTRE.

Paris.

CHIRITMANOS OF PERU.

SOME ACCOUNT OF THE CHIRITMANOS OF PERU, AND OF THE MEDICINES SOLD BY THEM. By WM. BOLLAERT, Esq., Corresponding Member of the Medico-Botanical Society of London.

THE following remarks I submit to the notice of the Medico-Botanical Society, not so much for their utility, as to shew the state of medicine, and its practitioners, in some parts of South America, and existing at the present time. During a residence in Peru, I had opportunities of collecting information relative to this class of people. The Chiritmanos are by some called the *travelling doctors* of Peru, and are Indians of Upper Peru, or (as it is now termed) Bolivia; their principal residence, when at home, is denominated the Tungas, where they collect the different herbs, seeds, roots, gums, &c. which gain them a living, vending them, and giving advice upon the different diseases met with during their journeys. Their advice and knowledge of diseases only extend to the remedies they happen to have with them. Their remedies are but few, and seem to be as well known (that is, their names and supposed virtues,) to their customers as to themselves. Some idea may be formed of the distances they travel, when it is stated that they go from Upper Peru to Buenos Ayres, a distance of more than two thousand miles, and they are to be met with likewise all over the coast of Lower Peru; and these journeys are chiefly performed on foot. At first starting, several go together, with asses laden, and at certain points they diverge, some taking one road, some another: at times one only may be met with, with a large wallet slung across the shoulder, containing the remedies, each done up in a little bag.

These Indians are of the middle size, of a dark copper colour, rather coarse features, and what does not add to their beauty is the continual chewing of the "Coca," (leaves of the Erythroxylon peruvianum, with a strong alkaline ash,) which give to the teeth and mouth a dirty green colour, and unpleasant smell. Their dress is composed of a coarse cotton shirt, without a collar; smallclothes, made wide behind; a jacket of coarse cloth, of the wool of the llama; sometimes stockings are worn, but without feet; sandals of hide; a large brimmed hat, of the wool of the llama or vicunna; the never-failing and useful poncho; and, lastly, a little bag, for toasted Indian corn, charqui, or dried beef, a few capsicums, and a gourd

for holding water: thus equipped, the Chiritmanos are ready for a journey of any distance, and through any sort of country. Their dress, once put on, very rarely comes off until worn out; and black is their favorite colour. Their language is one of the aboriginal dialects, pretty well defined, and is termed the Aymará; they understand Spanish, but some of them speak it very indifferently. They are not looked upon generally, by the better-informed folk in large towns, as having any pretensions to the knowledge of medicine, but there are purchased of them gum copal, gum thus, or incense, and some other resinous bodies for the churches; alum, sulphur, and a few such like things; but in the country, and villages retired from populous towns, much credit and belief is given to their remedies: they sell them at moderate prices, and give advice gratis. On a Chiritmano entering a town, it is soon known, and in a short time he is surrounded; when for every malady he has a cure, and for every sore a salve.

From what I have seen of them, they seem perfectly to understand their calling, and to be somewhat wiser than their customers. Their principal trade is in selling charms: these are seeds, &c. perforated, and hung round the neck; their stated virtues are many. The most useful article they might bring from Upper Peru is the Peruvian bark: this would, indeed, be of great service towards the coast, where agues of a very bad cast are very common: indeed, in many of the provinces of Peru toward the south, the bark is hardly known. Where it is known, it is given in powder, in large doses, mixed with old wine, with repeated draughts of lemonade, and certainly is a sovereign remedy.

These Chiritmanos sometimes perform the operation of bleeding: this is done with a very rude sort of lancet, made by fixing into a piece of wood a chip of glass, placing it on the vein, and giving it a nick with the forefinger and thumb something like the instrument and method used in bleeding horses.

The following are the names, &c. of most of the articles that compose this travelling shop; and as to their utility, in my humble opinion, all that can be said is, that they do little good or harm; some of the medicines may have properties to recommend them, if administered in proper doses, and by experienced hands.

Jaco: bole, principally of oxide of iron.

Soroa; good for the *aire*: this is a term for a cold. The substance is either taken in decoction, or the leaves moistened with saliva, and applied to the temples. It is a species of sage.

Youruma; bark of a tree, powdered, and taken as snuff in headach.

Piedra Biscal: this seems to be some inert earthy body: it is directed to be ground, and taken in warm water for the heartburn.

Quena Quena: seeds seemingly of a species of Annona: decoction of it used in headachs and tercianas, or agues.

Contrayerva; a species of Dorstenia: infusion in water given in pains of the stomach.

Chacaire: given in pains of the sides; powdered, and taken in warm water. This is the excrement of a bird called Coco.

Suelda con Suelda; ground into powder, and then fried in fat, made into plasters for broken bones. It takes its name from the Spanish word *soldar*, to mend or solder.

Huachanca; from a species of convolvulus, probably Jalapa, is used as a purgative. The dose is marked in the specimen.

Corro, or *Curru;* powdered, and mixed with fat and urine, used to rub the bones when painful. Seems to be the seeds in the seed-vessels of a species of the Helicteres, or screw tree.

Charna; some little sticks, mixed at times with the above. (It accompanies the foregoing.)

Venal; for bad eyes: the leaf is chewed, and the eyes anointed with the saliva. The bad eyes, during the operation, must be placed looking at the sun.

Colquemillo: this is alum; used in itch or pimples on the skin: the parts affected first washed with urine, and then the alum, in fine powder, sprinkled over them.

Chunchemuntana; for heartburn.

Ymale; for jaundice, powdered, and taken in water. Seems to be a species of Veratrum.

Raiz de la China, or Chinese root; used in gonorrhœa, likewise when the menses do not flow regularly: given as a decoction.

San Juanillo, or St. John; an agreeable bitter, chewed for toothach.

Ointment of St. Peter; wax, grease, &c. The Chiritmanos say several rare herbs enter into its composition.

Accite de Maria, or Mary's oil: a small quantity, used as a plaster, applied to the navel of females, during childbirth, to give easy labour.

Cebo de Utrunco; fat of a wild animal called the Utrunco, rubbed round the waist of women in labour: said to facilitate it.

Parches; patches or plasters: these are of various materials, but principally of leaves of favorite plants; sometimes the Coca, Ivy, Venal, &c. These are moistened with saliva, and applied to the temples in headachs, &c. At times some ointments are prepared from the leaves with fat and wax.

Charms: these are of various descriptions, such as the false nutmeg, Tairuvies, small red berries; another, a large black seed. These worn, prevent people from colds and coughs. Loadstone, if worn by either sex, ensures the love of those they are attached to;

said likewise to attract lovers. Another property is attributed to this substance, that of keeping evil spirits from the wearer. There are other charms against witches, ghosts, &c.; some against poison likewise.

Clysters are recommended in cases of stoppage in the bowels, but of such dirty and useless substances that they need not be mentioned here.

These are nearly all the remedies that compose the wallet, or travelling shop, of the Chiritmano, and very few seem to be of any real utility.

THE JURIBALI.

Remarks on the Juribali, or Euribali, *(so called by the Natives,) a Febrifuge Bark Tree of Pomeroon.* By John Hancock, M.D., Fellow of this Society, Honorary Member of the Society of Arts of Scotland, &c.

This tree is found in the forests not far distant from the coast. It is small, seldom exceeding thirty feet in height, and eight or ten inches in diameter at the base. It belongs to the eighth class and first order of the sexual system of Linnæus, and to the natural family of Meliaceæ of Jussieu. The calyx is very small, of one leaf, entire. The corolla consists of four petals, lance-ovate, white, spreading. The nectarium is a monophyllous, bell-shaped tube, eight-toothed, bloated or inflate, bearing the stamina in its clefts or notches: this part is described by several authors as the filaments united. The stamina are without filaments. The anthers are eight in number, ovate, erect, seated upon the mouth of the nectarium. The germ is obtusely conic and pubescent. The style is very short, bearing capitate, or rather coronate, stigmata. The pericarpium is a capsule, ovate, one-celled, trivalved, the valves bearing rudiments of septa at their extremities: it contains a single seed, which is roundish, black, crowned with a trifid wing, arillate on one side only; it is veined, and resembles the nutmeg in shape, but is only half its size, with a fleshy albumen and foliaceous cotyledons. The flowers are numerous, on long, lax, divaricate panicles.

Nature has distinguished this tree in a very remarkable manner; for it may be truly said to bear two distinct kinds of leaves, the stipules being, at certain seasons, so developed as to be not unfrequently confounded with the common leaves of the tree, but are distinguished by their shape and position. They are placed in pairs, and scattered along the branches; ear shaped or rounded and varied, obtuse and petiolate.

The common, or proper leaves, are alternate, oblong, pointed; they are scattered, without much order, on the branches; the petioles are short, compressed, and channelled. The bark is rough and gray externally, and, on peeling it from the tree, the epidermis scales off, and leaves the true bark of a smooth red surface. Its odour is peculiar, somewhat like that of tea-leaves. The wood of the trunk is dense and whitish; that of the branches somewhat coloured, and

traversed by a pith in the centre. The seed, crowned with a foliaceous appendage, corresponds with that of the first tribe, Meliæ, of De Candolle; in other respects, to his second tribe, Trichilicæ.*

In respect to the calyx (being quite entire), it seems unique, as all the others of the order are divided or dentate. The structure of the flower, in all other respects, is strictly conformable to the order Meliaceæ; whilst, in the fruit, (a single-seeded capsule,) it agrees with very few of them: in one species only, Trichilia moschata, we observe it noted *Capsulis submonospermis.*

The most remarkable disparity, however, seems to be in the presence of stipulæ, which have hitherto in no instance been observed in this order.

The Juribali, therefore, will be found, I presume, to constitute a distinct genus from any yet described: it so appears, at least, by comparing it with the forty-fourth order in De Candolle's Prodromus. The admirable arrangement, conciseness, and precison of this work enables us, at one glance almost, to observe the actual state of the science, so far as it goes, and, when completed, it will furnish an invaluable treasure to the botanist.

The bark of the Juribali gives a deep and lively red colour to water and spirit, in both of which its virtues are very soluble. It is a very potent bitter and astringent; in these qualities much exceeding the Peruvian bark, and will often be found to succeed after the latter has failed to remove an intermittent. I have commonly employed it in about half the quantity I should do for a corresponding dose of the Peruvian bark, to which, in fevers of a malignant and typhoid nature, it appears to be far superior. Notwithstanding its astringency, it does not, like Peruvian bark, constipate the bowels or affect the head, but generally opens the pores of the skin and promotes diaphoresis. To render it still more effectual, it should be taken warm.

More than one fourth the weight of this bark is soluble in water, whilst, according to Fabroni's experiments, the cinchona yields but about one sixth or one eighth. The active principle appears to be readily soluble in aqueous menstrua, and is therefore taken with much more facility than an insoluble woody mass, which passes the throat with difficulty and

* The learned author has this remark on the order Meliaceæ: "Ordo non [illegible] differentia colligere sed ob descriptiones [illegible] praecisas, in statu scientiæ praesenti extractu difficillimus et [illegible] meritis commendandus." Pars i. p. 619.

disgust, and often lies a heavy indigestible load on the stomach. Such considerations may one day appear of more importance than at present, when the prevailing infatuations respecting quinine and the new alkaloids shall have subsided, and given place to the exercise of sober reason and the examination of new doctrines by careful experiment.

I shall here notice the results of a few chemical experiments made on this bark, although I must confess I consider their action to be of very little consequence in elucidating the medicinal powers of any vegetable remedy. Gelatin forms with the infusion a precipitate of a reddish brown colour. Emetic tartar, nitrates of silver and mercury, acetates of lead and of alumina, all throw down precipitates of a light yellow colour; sulphate of copper affords a gray, and sulphate of iron a greenish blue precipitate. The carbonates of potash and soda render the infusion red brown, but form no precipitate. Lime water first renders the infusion green, then deep red, and throws down a copious precipitate of the same colour.

These experiments were made for the sake of comparison, consecutively with others, on infusions of cinchona of more marked sensible qualities, but which I could not refer with any certainty to their species. The results were in some cases similar, in others widely different in respect to the action of reagents; i.e. on the infusion of the Juribali and the cinchonas.

The recent decoction or infusion is of a red colour, but remains turbid for some days. After infusing it for two or three weeks, it gradually assumes a deep red tinge, more transparent, having deposited a flocculent sediment. In this state it gives a durable red colour to stuffs, and precipitates the infusion of galls, which the recent infusion does not.

It hence seems to be probable that, by a combination, or through some slight acidity, the infusion possesses the power of dissolving an alkaline principle, perhaps cinchonine, which is not taken up by pure water, or at least is not indicated in the recent infusion. It might be interesting to ascertain if the sulphuric or muriatic acids would evolve an alkaloid similar to those which are found in certain species of the genus cinchona.

The bark contains a resinoid extractive, which is soluble in boiling water, but not in cold; the decoction, therefore, becomes turbid on cooling, and gradually deposits a red powder. This deposit is soluble in alcohol, and appears to be a simple resin, and not the active principle of the bark; it is insipid when washed in cold water. From this, and some other expe-

riments, I concluded that *cold* water took up the *active* parts as well as hot.

This bark not only cures intermittent fevers, but remittents, also those of a typhoid malignant kind, and those destructive fevers in which the cinchona often does more harm than good. In some measure it emulates rhubarb, being cordial and purgative according to the dose; it is also a powerful diaphoretic, especially if taken warm, by which its value is certainly much enhanced as a febrifuge. I have used it in agues and in the malignant remittent fevers of the tropics, very freely, with the most decisive success, always in the form of infusion, commencing at any time or stage of the fever that may be present. By infusing an ounce of the bark in a quart of hot water, and giving a glassful once in two or three hours, I think it bids fair to be a useful remedy in smallpox and measles.

In a few instances the pulse seemed to be accelerated after its use, but was generally rendered slower and fuller; but I never ascertained the conditions of the patients under which these different effects took place, to my own satisfaction. Before quitting the present subject, I beg leave to allude to an opinion which has long prevailed in my mind, and which may be a novel one, or may not; but I have never heard or seen it adverted to, and, if correct, it may be worthy the candid consideration of the members of this Society and the profession at large.

We must all admit the great value and important advantages derived from the Peruvian bark in the practice of medicine. It is chiefly in fevers that its uses are to be regarded as paramount: but let us consider how far it is entitled to such unlimited encomiums as a febrifuge. It is certainly excellent as a tonic, and, as such, is applicable in the treatment of very many disorders. It affords one of the most efficient means of suspending the returns of the *common* intermittents. I say common, because, in the very malignant and bilious intermittent fevers of warm countries at least, often met with, it does more harm than good; and in the ardent, typhoid, and remittent fevers, and where most danger lies, we find its uses to be the most equivocal, and not unfrequently to produce a fatal metastasis on the brain: and in such fevers, those of the most dangerous tendency, it is rarely prescribed till the fever has subsided, when the skin has become moist, the tongue cleaning, sediment in the urine, &c., before the main remedy can be exhibited; and thus the time must be frittered away in *expectancy*, whilst the disease is making its inroads, until it

has worn itself out, and the principle of life perhaps along with it.* When debility is the chief symptom prevailing, and when, in most cases, the danger is actually over, the bark is thrown in, and gets the merit of the cure! Under this view, therefore, it seems to me that its uses are not so strictly what its title of *febrifuge* imports. It is not so much *to drive away* the fever as to prevent its recurrence, when nine times in ten *dangerous* remittent fevers will not recur after once coming to a crisis. A real and genuine febrifuge, I should conceive, is that which not only braces the nerves as a preventive, but which is capable of *driving away* or taking off the febrile paroxysm. Such is the true meaning I should attach to a febrifuge or an anti-febrile remedy and as such I conceive the remedy here recommended to be. But I shall leave the subject to the examination of better qualified judges.

This is, as before mentioned, but a small tree; there is another which grows very large, often confounded under the same name by the Arowaks: it is the Icica Altissima of Aublet. The remarkable large stipula, however, distinguishes the right kind most readily from every other tree which might otherwise resemble it; the scaly cuticle is also a good mark of distinction.

My experience is chiefly confined to its use in fever, but it may doubtless be regarded as a general tonic, and applicable, perhaps, in most cases as a substitute for the cinchona; externally it is found to be a very useful application to foul and ill-conditioned ulcers, either in powder or decoction.

There is another tree of the inland parts, called Caramata and *Arumari* by the natives, which affords likewise a very valuable remedy, a very bitter bark, which, from many trials I have made in those cases, appears to be equally safe and efficacious in those dangerous typhoid and remittent fevers in which the cinchona is either useless or pernicious, especially when exhibited during the febrile excitement. Being partial to the combination of similar remedies, I have in a few instances, when both happened to be at hand, infused the two barks (Juribali and Caramata) together, half an ounce of each, grossly powdered, to a quart of boiling water, giving the patient a wineglassful of the infusion, kept warm before the fire, once in two to four or six hours, according to the urgency of the case, and it has appeared to me to operate in this way with uncommon efficacy: but no one person singly is fit to

* Our profession has given too much reason for the satire of Voltaire, when he remarks, that "Nature cures diseases, and the physician assumes the credit."

decide upon the positive or comparative merits of a new remedy; and I shall, with great pleasure, submit these two medicinal barks, for further proofs and experiments, to the learned members of this Society, together with some imperfect botanical specimens of the trees from which they are procured; and, being soon to return to British Guiana, shall not fail to forward to the Society sufficient supplies* for making the requisite trials of their virtues, being fully convinced that no institution can afford such advantages as the Medico-Botanical Society for proving and fully investigating all the details which are requisite for the complete development of the powers of new remedies, and for deciding on their real or imaginary virtues.

It is only necessary to look at the assemblage at one of the general meetings, or at a list of the members of this Society, to be convinced of the truth of the remark which I have just made. We there behold a phalanx of talent, of the first order of botanists, chemists, physiologists, and the votaries of general science, combining their powers for the purpose of forwarding objects of the most vital importance to our species. To all these facilities are added the great paramount advantage, that many of the learned members, physicians and general practitioners, besides an extensive private practice, are connected with hospitals where numerous patients are under immediate inspection, affording altogether the most adequate means of instantly submitting any remedy to the test of clinical experiment.

It might perhaps be considered invidious to designate any of the eminent members in support of my assertions, I may however observe that I could mention very many names calculated to bestow celebrity, and to strengthen the great and worthy cause in which this Society is engaged. It is sufficient here to mention that the distinguished presidents of the College of Physicians, and of the College of Surgeons, are amongst the number, as well as many others, scarcely less eminent, and, without disparagement, we may say of equal talents. If the old adage, borrowed from the Romans, be true "in union is strength," we can scarcely wish for a better assurance of prosperity, and especially whilst the Society has the further guarantee of success, from the exertions of so zealous, learned, and distinguished a nobleman as presides over it and at present guides the helm; who, without professing the Æsculapian art,

* I have been extremely disappointed of these, and numerous other interesting articles, which were promised to be forwarded from the same quarter, during my abode in England.

is yet deeply read in it, and especially attached to the much neglected, but most important, department of medical botany, and, although not a medical practitioner, yet a practiser of charity, and, I may add, a real friend to the poor and a patriot of his country.

Some may imagine that this is irrelevant to our subject, but I entertain a different opinion. The objects we should hold ourselves pledged to maintain are, and I hope ever will be, the charitable purposes of aiding the poor, and of turning the bounties of nature to the relief of human suffering.

INAUGURAL ADDRESS.

Inaugural Address, delivered at a Meeting of the Medico-Botanical Society of London, held February 16th, 1831; Philip Henry Earl Stanhope, *President, in the chair.* By Gilbert T. Burnett, Professor of Botany to the Society, and Lecturer in the School of Physic, St. George's Hospital, &c. &c. &c.

MY LORD PRESIDENT, AND GENTLEMEN:

As circumstances vary the relations in which men stand, the duties are varied they are destined to perform. Each step advanced, each height attained, as it expands their influence, in an equal degree extends their care. Posts of honour are not posts of ease, but are regarded in their truest light when they are viewed as stations of responsibility; and before attempting to fulfil the duties of such stations, all, who sincerely desire to discharge them with credit and profit to themselves and others, should endeavour clearly to understand their nature, and to become fully impressed with their importance. Since, therefore, being called to this honourable chair, I have laboured (not wholly, it is hoped, with fruitless effort,) to inform myself as to what must be required of the Professor of Botany to the Medico-Botanical Society; an office of no mean rank, in a Society of no mean importance: a Society, the bare mention of whose objects must immediately challenge our attention and regard, directed, as its exertions are, to the philosophic investigation of the distinctive characters and medicinal properties of plants; a knowledge by which, when fully gained, the power of physic will be much increased, and pain disarmed of half its terrors, by which *(Deo volente!)* the life of man may be much prolonged, and human misery may much be lessened.

As the avowed objects for which this Society was instituted, and the laws by which the Council govern, alike preclude all dissertations on purely botanical researches, topics upon which a botanic mind luxuriates, points upon which it loves to expatiate; of course, all comments on the laws of life affecting the development of the vegetable structure; all remarks on the wonderful metamorphoses, both regular and irregular, transitional and vicarious, which plants continually pass through; all disquisitions on the vital functions of these simplest organic beings; the assimilation of their food; the production of their peculiar principles; the reproduction of their species; their irritability; their seeming instincts; with

many, many other curious and interesting physiological themes, though pregnant with information and replete with wonder, are all alike forbidden here. Botany being, to the Medico-Botanical Society, but one among several means by which it proposes to advance an ulterior object; hence, I must confess that my favorite study must not be allowed undue preponderance, and I submit to the decision, that, although a *means*, it is not *here* an *end;* it is one way to the science here held in view, (and a delightful flowery path it is,) but that it must not be mistaken for the goal itself.

Therefore, as these favorite topics would be here irrelevant, to a not less important, though less entrancing section must our attention at this present be directed, to one subdivision of one section of this extensive science, viz. Economic Botany; whence I shall be led to discuss the uses and properties of vegetables, more especially of medicinal plants, and medicinal preparations. Hence, in order not to wander from my province, and hoping to be set right by the Council if I greatly err, is it that I have resolved, in this my inaugural address, to trace, as it were in outline, the progress of medico-botanical science; for thus will be most clearly seen, not only the benefits it has bestowed upon mankind,—for thus will be most certainly foreshown, not only the blessings it has still in store, but also, from this conspectus of what has been already done, we shall be directed to what there remains for us to do: directed to that course which may most advantageously be pursued, and encouraged in those researches by which, in conjunction with his colleagues, the professor of botany may hope most efficiently to serve the ends, most rapidly to advance the objects, of your Society: for he feels, acutely feels, that, as an office is honourable, so, in an equal degree, does responsibility attach to him that holds it.

Gentlemen: As long as the human race have been subject to disease, as long as pain has been an evil, so long must means of alleviation have been sought, and so long must medicines have been prescribed and used. Rude, indeed, were the early essays of our art, and long must they have continued rude: the morning twilight of physic has been for ages dawning into perfect day; comparatively, it is not long since men, ignorant alike of the indications to be observed, and of the instruments by which those indications might be fulfilled, prescribed scarlet clothes for fever, because they both were red, and saffron for jaundice, on account of its yellow hue.

Much lately has been done in the investigation of diseases,

their causes, their symptoms, and their effects; pathological anatomy has revealed many of the changes which various structures undergo, some of which morbid conditions impair the energies, and others are incompatible with the duration of life. But what avails it that the physician can trace by symptoms the successive stages of disorganization, as they proceed in structures concealed from view? what avails it that the surgeon can proclaim the appearance of such morbid alterations long before dissection unfolds them to the light? what avails it that both can foretell the impairment or destruction of vital parts, without they can at the same time learn to check the ravages of disease, and either to alleviate the sufferings of the patient or to afford him a perfect cure? Without such an application of this art, the means of obtaining it would to many be repulsive, and the science itself not a blessing, but a bane; as the foreknowledge of ills that could not be relieved would but aggravate the misery man is called on to endure. But such is not the opprobrium of our useful, and hence noble arts; for the theory of physic is founded on experience, and the benefits of its practice who can venture to deny! As sciences, medicine and surgery find few their equals; and as arts they are excelled by none.

Much, I repeat, has been lately done to advance our knowledge of disease, and something, though much less, to perfect our instruments of cure. These, however, are sister sciences, or rather their connexion is of a still closer kind: they are twins, which, as they are naturally, so for ever they should remain inseparably conjoined; and for the Medico-Botanical Society, whose attention is especially directed to this point, has the grateful task been left of perfecting this union: on it devolves the duty of steadying the arm of science, and placing surer weapons in her hands; i. e. of providing for physic new and more certain remedial means.

A circumstance which still shrouds medicine in mystery, must have been formerly much more perplexing than we find it now. Even, however, in the present day, it frequently involves the principles of our practice in obscurity; and hence some persons, ignorant of how many cases there are in which it approaches demonstration, have not scrupled to call physic a conjectural science; to define its object to be the calculation of chances, and its decision the balance of probabilities. I, of course, allude to the acknowledged difficulty of determining how far a cure should be attributed to the renovating powers of life, and how far to the remedial agents which art employs: for some diseases, and especially in some constitutions, will disappear not only without, but even in spite of the

physician; whilst others, in other persons, or even in the same person at other times, not the most consummate skill can cure. Of this, the records of legitimate practice would afford us abundant illustrations; but the empirical artifices of the present day form still more familiar examples: to these I shall not particularly allude: some will *long* be notorious beacons.

From these sources of error, many useless, many nauseous, and not a few noxious, agents have, from time to time, been introduced, several of which have enjoyed an ill-earned fame; while some really efficient medicines have as undeservedly fallen into disrepute. Hence, likewise, can we account for many of those superstitious rites, anciently so mixed up with medicine as to have been esteemed an essential part thereof. Few persons will take the trouble of distinguishing the *post* from the *propter*; and, even to those who would, the power is oft-times wanting. A mind, patient in observation, and well disciplined to distinguish truth from error, does not commonly coexist with that instinct (shall I call it almost blind instinct,) for generalization, by which theories are planned, and systems raised. Allow an example to illustrate this abstract proposition.

Achilles, writes the poet, escaped unhurt, though long exposed to all a warrior's danger, (and so did others of the Grecian force, and so do many others in every hostile meeting;) Achilles at last was slain by an arrow which transfixed his heel, (and so have many others fallen by wounds in some especial parts, whether in the head, the hand, the heel, for weapons to each victim are not omnipresent;) but Achilles had been bathed by Thetis, (and so by most parents have their sons been washed;) yet it is fabled that the heel by which his mother held him was the only part unwetted; that heel, it is said, was pierced; and hence arose the fame of the antivulneriferous waters of the Styx. "Post *ergo* PROPTER *balneum salus.*"

Again, in times of general sickness, the Romans, with solemnity, elected a Dictator, for the especial purpose (and that alone) of driving a nail into the temple of Jupiter, and when afterwards the pestilence decreased, *post ergo propter malleum salus.*

Just as, at the present time, in countries where the plague prevails, an angel is believed to cast a drop of water on the earth, on the festival of St. John, after which day the plague is stayed, and to which the restoration of salubrity is attributed, rather than to the actual cause, viz. the great increase of heat that then ensues, and which is incompatible with its duration.

Again, honey was employed in ancient times, as still it is, as a useful application to relieve aphthous eruptions in the mouth and fauces; but then the relief obtained was attributed not immediately to the mean employed, but intermediately to an extraneous coincidence foreign to its nature, and only therewith fortuitously connected; i. e. the cure was ascribed by Soranus, who records a case in point, not to the honey, *as* honey, but to the accidental circumstance of *that* honey, which wrought the cure he mentions, having been procured from bees that had hived near Hippocrates' tomb.

Thus when men prescribed medicines, of the properties of which there was little known, for diseases, of the pathology of which they knew much less, it cannot be surprising that, although sometimes, *perchance*, they might assist recovery, more frequently they would do no good; and not uncommonly they would do much harm. Still, such was the perverseness of superstition, such the obtuseness of her votaries, that, whenever recovery ensued after the administration of any remedial means, were it either independent, or even in spite, of its effects, the cure was immediately attributed thereto; and when, as oftentimes occurred in cases of real disease, (although many slight or supposititious ailments would occasionally disappear during the exhibition,) it failed to cure or to relieve, some trifling variation in attendant circumstances, such as the mode or hour of administration or collection, or some such other trifling irregularity, not only foreign but impertinent to the question, was referred to as the source of failure: and hence arose many of those superstitious rites which figure so strangely in the medical records of antiquity. Thus, if, as we are told, the vervain cured the falling sickness in one individual, and in another failed; i. e. if *after* its administration one individual got better, and another worse, and if it was observed, or even fancied, that the latter had gathered the herb with his right hand, and the former with his left, this supposed ceremonial irregularity was esteemed a sufficient cause of failure; and hence arose the dogma that vervain should be gathered with the left hand only; but when, as could not but occur, of the left hand gatherers, some recovered and others died, further sources of disappointment were invented, and any thing was doubted rather than the potency of the plant *when charmed;* such as the time, the previous incantations, and other such like matters. But, in spite of all precautions, failures still ensued, and as fast as failures multiplied, so fast increased the ceremonials likewise, until at length we learn that the vervain was to be gathered with the left hand only, libations

of honey being previously poured out, and after the plant had been encompassed with a circle: it was to be done likewise at the rising of the dog-star, and when neither the sun nor the moon shone. Again, the Selago was to be reverently approached with the feet bare, yet never to be touched with the naked hand. But, not to add instance to instance, for here the increase of examples is not required, the mistletoe, or all-health of the Druids, may be at once referred to, as a most remarkable and familiar illustration, and one, the particulars of which, without repetition, will be present to the memory of all.

When subsequently, as could not but occur, some refractory patients refused to take the nauseous doses which fraud and superstition had prescribed, and still, in spite of their presumption and irreverence, recovered, then the ceremonial observances of the friends or the attendants received the credit which had previously been given to the drug, and certain rites became esteemed as charms for the cure of persons sick, and for the preservation of those in health. Hence votive tablets and incantations sprang; in truth, a vast improvement in the art of physic; for, during these ritual observances, nature was allowed to effect a cure unimpeded by the interference of ignorant pretenders. The cure of wounds by sympathy forms of this a celebrated example; for thus the noxious dressings became applied to the weapon, instead of to the wound, which modest nature in the mean time healed; while incantations and sympathetic unguents gained the credit: to them, however, much praise was due, for the time they afforded to the *vis medicatrix* to effect a cure.

But were all the therapeutic agents, so famed in former times, utterly inefficient towards the recovery of health? Certainly not: far from it. But the principle of their administration was woefully misunderstood; and, consequently, the means themselves capriciously and often ineffectually applied. For who doubts the efficacy of hygeian springs, or the recovery of the sick who journey in quest of health to Hippocrates' tomb? Who doubts the history of strength restored to pious pilgrims, when abstinence and exercise (the sanative principles of the "*ball of basilisk*") were necessarily attendant on their visits to distant shrines. For one, I doubt not. I believe implicitly that many did not recover; that many were relieved; that many were restored to perfect health: just as I implicity believe a journey (call it, if you please, a pilgrimage,) to Cheltenham, to Harrowgate or Bath, to Madeira, the south of France or Italy, the change from a London to a

country life, a necessity for exertion, more early hours, and often some slight abstinence in food, or a total change of diet, will even now, and in these degenerate days, do much towards checking the progress of disease, much towards the recovery of health To be sure, the principles of the prescription are not similar, although both the agents and the patients are much the same. *Nomina* as well as *Tempora mutantur, sed nos* non *mutamur ab illis.*"

We smile at the recital of the superstitions and credulity of a former age, and we do well: though we little think that our smiles too often condemn ourselves: for how little do we yet know of the nature of the instruments we frequently employ for the cure of disease, and how very little of the nature of disease itself. I say not this invidiously, for much in both departments has been lately done; but this increase of light only the more strongly shows how very much more there remains for us to do. Still this is a subject rather of congratulation than despair; it is rather our incitement than disgrace.

Experimental study, supplanting mere speculative philosophy, has worked miracles on every side; and in no science has it wrought more wonders than in our own. Experiment is the key by which we have been already able to translate so many passages from the book of nature into our mother tongue, and by which we hope to be enabled to construe many more. But because much has been lately done, therewith shall we rest content?—forbid the unworthy thought; for contentment too often is allied to sloth, and sloth is the bane of science. Our predecessors have been our pioneers; they have cleared away from the entrance to the temple of Truth much of the accumulated rust of ages. We now no longer hear of the royal touch being efficacious in the cure of scrofula; although once, in this very town, a philosopher (who lived, as we might say, before his age,) was tried, found guilty, and severely punished, for doubting the efficacy of this repellent. We no longer hear of those disgusting tales of females crowding to the gallows' foot, to have unsightly tumors rubbed with an executed felon's hand; and their necks, by the officiating hangman, smeared with perspiration wrung from a fellow-creature in the agonies of death. No longer are our Dispensatories disgraced by the enumeration of "manus regalis" et "manus hominis mortui" as remedial means. Yes: our Dispensatories have been much purified of late, and medicines no longer are prescribed merely because they are nauseous; nor things now given to a man when sick which would disorder his system even in the most perfect health. General

observations are, however, tedious: let them be changed for an example. Among the much valued vegetable medicines of the century before the last, was mouldiness, or mildew: not simply mould, not that which springs on decaying wood, or bread, or meat, or cheese, but mouldiness scraped from a human skull. This drug even stands in the catalogue of materia medica published by the London Royal College of Physicians A. D. 1618, as "usnea cranii humani," which shows how much it was esteemed; for the College have ever striven, as far as the prejudices of the age would let, to discard all useless articles, and to march, though with discretion, not hardihood, in the van of science. Again, the urine and the excrement of various animals were formerly much esteemed: and of each we find extensive lists recommended officially to notice. Much of the supposed efficacy of drugs seems once to have been attributed to the filthiness of the sources whence they were derived: thus, although carbonate and phosphate of lime are excellent absorbent earths, and exhibited with much benefit in many cases of cardialgia, diarrhœa, and other complaints, still a simple chalk mixture would have been formerly despised; while one of *album græcum* would have been swallowed with avidity. Now album græcum, it is all but needless to observe, was only an impure bone earth, not obtained from the laboratory of the chemist, but elaborated in the intestines of the dog. For the preparation of this precious drug, dogs were purposely all but starved, well-picked bones being their only food; and then, the gelatine of the bones being partly absorbed during the passage of this osseous matter through the alimentary canal, the earthy portions were evacuated in a half-blanched and semi-pulverulent condition: this excrement was then collected with a jealous care, and became the album græcum of the shops, highly prized as a discutient, and forming a favorite internal application to the throat in quinzies. I will not waste your valuable time in further disquisitions on this subject, although it is a point of curious interest to trace the progress of the art we study, and highly useful sometimes to unravel the absurd intricacies of those who loved to make medicine a greater mystery than it ever will inevitably be; for thus do we in our minds enhance the estimation of that unsophisticated and simple nomenclature which signalizes the age, and with which science now in general is blessed: and we shall ever value more this striving after perspicuity, even if it fail, when we contemplate the obscurity in which all subjects were at one time purposely involved; *names* being given to *things* apparently rather to conceal than to explain their nature, although sometimes, as

in the *aqua omnium florum*, there was an oracular latent witticism which fails not to provoke a smile; for, says BAILEY, "*aqua omnium florum*" means (among chemists) the distilled water of cows' dung, when cows go to grass. But of this enough: one sample of such precious balms may well suffice.

An imperfect knowledge of the essential properties of medicines, especially of the vegetable materia medica, has always led, as still it does, and as long as it exists must ever lead to complicate our prescriptions, to cripple our resources, and to confuse our principles of practice. Formerly this was much more prevalent than it can be now; but, even in the present age, I doubt not that great and unneeded complexity remains, though as yet it may be hidden from our eyes. Each succeeding year long has tended to simplify and curtail our catalogues of drugs; and each succeeding year, it may be easily foretold, will tend to simplify and curtail them more. I could point out many instances, both ancient and modern, in which agents, similar in effect, if not identical in composition, appear many times under different denominations, their names being the points in which they differ most. How many mere varieties of carbonate and phosphate of lime do we even now admit, merely because they are derived from different sources, and how much more numerous were they in the age before the last, when all drugs were considered essentially distinct whenever the substances were distinct from which they were obtained. I have chosen this purely chemical illustration because chemistry has lately thrown so much light on medicine, and promises to shed much more, and its researches are far more complete in the constitution of inorganic than of organic nature. Indeed, we are at present unable to determine, in the vegetable department, how far many of our most costly drugs may be entirely dispensed with, as many have already been. How many mere varieties of expensive astringents, bitters, aromatics, &c. do we not now employ, when more than a reasonable doubt may be entertained as to whether, as in the instance referred to, their truly efficient principles may not be extracted from cheaper materials and more abundant sources: of this we have already proved the practicability in several important cases. Thus, the vegetable alkali, our sub-carbonate of potash, was at one time possessed of numerous names, and appeared and reappeared over and over again in the Dispensatory; and yet, at each repetition, seems to have been considered a new and independent drug. Thus, we find it introduced under the style and title of Sal Absinthii, or salt of wormwood, Centaurii minoris, Cichorii, Euphrasiæ, Fabarum, Fumariæ, Genistæ,

Herbarum, Plantaginis, Plantarum, Quercûs, Tartari, and many others, as each vegetable was considered to afford a peculiar salt: while, in truth, none of them differ essentially from each other, the only variation being in their relative degrees of impurity; so that the terms Sal vegetabilis, or Sal plantarum vel herbarum, would conveniently include the whole. And yet, even now, or very lately, as I have been credibly informed, some persons will give a quadruple or quintuple price for Sal absinthii, an impure subcarbonate of potash, obtained from wormwood, to what they will for the same, but more pure and valuable drug, derived from common and less costly sources.

This is but a solitary example, yet it may serve to illustrate the whole.

Shall I add a further illustration, *oxalic acid*, if procured alone from the plants whence sprang its name, (Oxalis acetosella, corniculata, &c.) would be a very expensive drug: even when at first, under the appellation *Acidum sacchari*, it was formed by the destruction of sugar, it was, within my recollection, sold in this town at 3s. 6d. and 4s. per ounce; but now it may be bought at the manufacturing chemists for about half that sum per pound.

Probably a like fortune awaits many of the proximate principles, in modern times discovered, and still considered to be distinct. Thus, Colchicum is doubtless a useful medicine, though fashion has somewhat enhanced its fame, while Gratiola, the old Gratia Dei, and Veratrum album, or white hellebore, have completely fallen into disuse, if not into disrepute; and yet the active principle is in all the same, and might, if extracted from either, be indifferently used, and with equal advantage and effect. May not this indicate the propriety of extracting veratria from hedge hyssop, or veratrum, where those plants abound, rather than from the expensive colchicum? These instances must likewise indicate the advantages likely to accrue from an intimate acquaintance with the proximate principles of vegetables, when we may find our active agents, not in one situation only, but recognize them in many, and seek them wherever they may be most abundantly present, or most easily be found.

I fear that an accumulation of the evidence of how much is wanted to be known on the points which this Society has proposed as the objects of its chief inquiry, might weary the attention of the meeting. I will, therefore, add but one example more. The value of Peruvian bark is by all acknowledged, and it is likewise known to every one that there are many species of Cinchona, differing in

their efficacy and worth. Of these, three are admitted into our London Pharmacopœia; viz. Cinchona lancifolia, or lance-leaved cinchona, affording the pale brown bark; C. oblongifolia, or oblong-leaved cinchona, yielding the red bark; and C. cordifolia, or heart-leaved cinchona, which gives the yellow bark. Now, of these three, it is well known that the lancifolia, or quilled bark, has in general been, by the profession, the most esteemed; still the oblongifolia, or red bark, has not been without its advocates; indeed, popularly, it was so highly prized that, in the markets, it would occasionally fetch threefold the price of brown, and six times as much as the yellow, or heart-leaved species, which was comparatively slighted both by the profession and the public. Perhaps, the scarcity of the red bark contributed something to its high estimation, as the relative abundance of the yellow not improbably increased its disfavor, just as at the present day no one will use, (indeed, who would condescend to use,) the indigenous simple, aromatic, and astringent bitters, Menyanthes, Teucrium, Salix, Acorus, and Bistorta, which grow abundantly at Hampstead, Highgate, Battersea, and Paddington, when they can have Quassia, Catechu, Cinchona, and Colomba, by sending to Hindoostan, Jamaica, Mozambique, or Peru?

And here (as in a parenthesis) I would observe, that our native medicinal herbs have of late been too much neglected; for certain it is that we compass half the globe to import a drug, the prototype of which not unfrequently solicits our hands at home. I, for one, can never think that all those plants are useless that we use not; that such countless myriads of beauteous herbs which "spring profusely wild over all the deep green earth," spring oft in vain, because in vain they court man's notice and regard; I never can believe that Providence has armed the weeds of foreign lands with powers necessary for us, whilst ours are impotent to heal. I never can believe our herbs inert, whilst every plant in other climes may boast itself a physician's staff. I am fully sensible of the advantages of labour, and have often dwelt on the blessings, on the peculiar privileges, those men enjoy who by their station are compelled to work. Yes, I know that it is by a merciful dispensation that man has been condemned in the sweat of his brow to eat his bread; I feel that, where necessity compels not to exertions, indolence debases man almost to the level of a brute; and likewise, I confess that, where most is required for the body, there most fully are developed the energies of the mind: still I cannot but perceive that many of our native plants want but to grow upon

the Andes or the Alps to be sought with avidity, and treated with respect.

It is therefore a matter of no mean importance to which, by a resolution of the council, the attention of the scientific world at large, of the members of this Society in general, and of my colleagues and myself in particular, is directed, by the determination to award the silver medal of the present year to the author of the best essay on the nature and uses of any indigenous plants the medicinal powers and properties of which have been hitherto unknown, or only imperfectly recorded. To me it appears that this will be sinking a shaft in a very rich mine of scientific discovery, of truly philosophical research. I doubt not, that we shall find many of the remedies now sought from the tropics and the poles growing at our doors, and soliciting to be allowed to relieve our ills. It is an amiable idea, and one that experience goes far to verify, that wherever natural circumstances favor the production of disease, Nature, i. e. nature's God, hath beneficently conjoined the means of cure. May not the late experiments with Salicine be given as an apposite illustration? For, although we have so long been ploughing the Atlantic, and burdening the bosom of the deep, to bring home our harvests of Peruvian ague-cure, the ever valuable cinchona, *Salicine*, extracted from our native willows, so far as experiments as yet have gone, is proved to be equally efficient with the *Quinine* of Peruvian bark. Where do agues most commonly prevail? Where do we find remittent and intermittent fevers of the greatest frequency and most fatal severity? Where, but in wet low lands; in marshy and in fenny districts. And where do willows love to dwell? Where, but in those very fens and marshes; as if designed to relieve the diseases inseparable therefrom. Hence I cannot but regard them as the living elaboratories of nature, thus planted by Providence to form Salicine for the use of man.

Of the energies of our native plants the herbalists of a former age were doubtless too easily persuaded; their experience could have scarcely justified the enconiums they lavished upon many; at least, our observations will not permit us to corroborate their praises: but, however ready we may be to allow (and no one is more ready than myself,) that the curative powers of many plants have been greatly exaggerated, and that ignorance and superstition have attributed effects to other things than causes, and have often thus ascribed to various vegetables, virtues which they have not, and never had; still I can hardly think that all their asseverations should be based in error; even the greatest lies are generally founded

on some little truth; indeed, without it, they scarcely could be framed. And when we consider how truly significant are the common names of plants, such as woodbine, cleavers, sea-thongs, catch-fly, rest-harrow, choke-pear, and many others; when we reflect how justly descriptive is our native nomenclature of many of the properties of the plants to which the rustic names belong, such as bitter-sweet, hedge-mustard, water-pepper, fool's-parsley, hen-bane, dog-bane, flea-bane, cow-bane, bug-bane, fish-bane, bane-berries, bane-wort, deadly nightshade, and so on, shall we precipitately conclude that the malevolent terms alone are akin to truth, and that balm, and eye-bright, thyme or strength, wormwood, tetter-wort and quinsy-wort, scurvy-grass, fever-fuge, and a multitude of others, are all unmeaning appellations, because forsooth the ancient cure-all, all-heal, all-good, long-life, and live-for-ever, seem, when misunderstood, somewhat hyperbolical expressions.

"Sell your coat," says the Italian proverb, "and buy betony:" wherefore should this plant have been formerly so much esteemed? So little is it now regarded, that we might almost say it is despised. This question, however, will not come alone: for the same may be pertinently asked of our dysentery, uvula, and tooth-worts, of our mad-worts, liver-worts, and gout-worts. But, even granting that some, or many, or even all, our health-promising plants, have no right to their appellations, i. e. exhibit no sensible properties when taken, (which, however, I am far from presupposing,) will it be no advance in knowledge to ascertain the fact of their inefficiency? Will it not avail us much to know that such and such plants do *not* possess either medicinal or poisonous powers, instead of continuing in unenviable doubt? for such as are unfit for physic will afford harmless, and often most nutritious food. Hence I am far, very far, from underrating such negative knowledge; and I am sure I am as far from overvaluing its importance, when I state that, in the treasury of science, it becomes positive information: just as in that language which lives alone to learning and seems to science sacred, two negatives have an affirmative, or, according to their relative situation, more than an affirmative meaning. For example, *non-nihil* and *non-nunquam* simply reverse their separate import, and may be translated *somewhat* and *sometimes*, while *nihil-non* means *every thing*, and *nunquam non* means *always*. So, as is symbolized in this apposite illustration, negations in experimental researches, when duly appreciated and properly employed, become most important positive affirmations.

But to return to the point whence this episode sprang, and to the path whence a favorite topic has so long seduced us. There are several circumstances connected with the history of quinia and cinchonia, the proximate principles of the Peruvian barks, to which, might I so far presume, I could much wish to invite the attention of my colleagues, the learned professors of Materia Medica and Chemistry; for to my mind they require much further elucidation, and many experiments seem wanting to ascertain correctly the properties of these barks, and the principles they respectively afford. The quilled or pale-brown bark was a few years since so much more highly prized than the yellow, that it was sold for sixteen shillings a pound, whilst the other would scarcely fetch a crown; and yet quinia, now so much esteemed, and believed to be the potent principle of the Peruvian barks, is abundant in the yellow, and all but absent from the quilled. Indeed, I am informed by my friend, Mr. Hennell, of Apothecaries' Hall, one of the most indefatigable and intelligent pharmaceutic chemists of the day, that if the specimens submitted to analysis be correctly sorted, (for, in commerce, they are generally met with mixed,) no quinia at all will be found in the quilled bark, but abundance of cinchonia; while, in the yellow bark, the quinia is abundant, and the cinchonia wanting.

Now this is a result which could not, *a priori*, have been conceived: for it is the *quinia* which is now extolled for its extraordinary curative effects; which principle, be it noted, is absent, or all but absent, from the quilled bark, so lately prized for similar powers; while the *cinchonia*, which abounds therein, is disesteemed: and, on the other hand, as a counterpart to this paradox, *the yellow* bark, so long neglected, yields abundantly, almost exclusively *quinia*, the present fashionable tonic, whilst it contains none or very little of that other principle *cinchonia*, to which all the former cures of its compeer, the lance-leaved bark, must be attributed; it being, as already stated, in an equal degree devoid of quinia.

In the *red* bark both *cinchonia* and *quinia* are found, but in much smaller relative proportions. It is likewise a circumstance worthy notice, that some of the other species of cinchona, specimens of the bark of which occasionally reach us, are said to afford these principles more abundantly than any of the officinal ones; and it is also probable, as shewn by Dr. Hancock, that other genera may be more advantageously used as febrifuges than cinchona.

Now, from these premises, we cannot avoid the conclusion that further experiments and investigations, both botanical, chemical, and medical, are much required: for if the quilled

bark really did cure ague, and of this there can be no doubt, and if in it there is little or no *quinia*, but *cinchonia* is present in abundance, either its native quinia must be converted into cinchonia, or the neglect with which cinchonia is treated can scarcely be its due. Again, the merits of quinia may perhaps have been too much extolled; or it is not impossible that the red bark, which contains the two principles in question, or a preparation or formula comprising both quinia and cinchonia, whencesoever extracted, may be found the most efficient mode of administering relief in ague.

But these are problems requiring much attentive consideration; and experience must prove whether the former confidence in quilled bark, or the present trust in quinia, be most correct. Probably cinchonia is esteemed too lightly; it demands a series of experiments to ascertain its medicinal effects. This is, however, but one of many points equally requiring investigation, and which must be more fully entered on hereafter: and it is only at this present glanced at, to show how much and in how many ways the exertions of our Society are wanted; how much and in how many ways its members can benefit the world at large. For it is not improbable that many of these proximate principles, now considered as different and distinct, may be hereafter found to be similar in effects, if not absolutely the same in constitution, just as all the old salts of plants, viz. of wormwood, centuary, broom, and others, have been proved to be one and the same, viz. subcarbonate of potash.

The extraction of the proximate principles of plants, of those especially on which their peculiar properties depend, is doubtless a triumphant step in Phytochymics, or Vegetable Chemistry, and is another point to which I must briefly draw your attention; as it is a discovery which promises to open a new era in science, and to work a complete revolution in the armoury of physic. To the superficial observer it may seem that these discoveries, though undoubtedly of very modern date, had been long obscurely adumbrated, as it had for years been known that the stimulating powers of many plants, as of the Cruciferæ, for example, were destroyed by simple ebullition; that the poisonous principles of Mercurialis perennis might be extracted by boiling in water, when it becomes a palatable and harmless esculent; that the virulent qualities of the Cassava are separated by heat, and that, after roasting, it is esteemed an admirable and nutritious food. This knowledge, however, differed widely from that which has enabled us to reduce and exhibit, in a constant and determined form, quinia and cinchonia as the active and proximate principles

of bark; salicine from willows; veratria from colchicum and white hellebore; morphia, narcotine, and meconic acid from opium; and so forth. Great caution, almost a jealous caution, is, nevertheless, required in watching both the extraction of these principles and the records of their effects: for it is not impossible, nay, it is far from being improbable, that some of these substances are products rather than educts of the chemist's operations; just as sugar may be produced from rags, tan from saw-dust, vinegar from wood, oxalic acid from offal, and so on. Not that the mere fact of such transmutations would render the substances produced a whit less valuable than if they were educed; their value must depend upon their intrinsic worth; and it may be far more advantageous, under certain circumstances, to resort to the crucible of the chemist, than to the laboratory of nature, for many of them. We know that wood consists elementarily of charcoal and water; that starch, and gum, and sugar, are similar in their elements likewise: and that they only differ from each other in their relative definite proportions: we know that nature, by varying the atomic ratios of these few simple elements, changes, as in the ripening of fruit, tasteless lignin into powerful acids, which in their turn become converted into sugar, often impregnated with peculiar essential aromatic oils; and thus, in plants, her living retorts, Nature, from watery sap and atmospheric air, so modifies the union of three simple bodies, as to form gum, sugar, starch, lignin, resins, oils, acids, alkalies, and alkaloids, with numerous other proximate principles in abundance, of every kind and in every variety; and this by merely varying the relative properties of the same simple constituents, oxygen, hydrogen, and carbon,—these three, for others are seldom and sparingly employed. We also know that in some instances our laboratories can imitate the vegetable alembics, or render their processes subservient to our designs. Thus, in malting barley, germination is suddenly checked when the starch of the grain has become converted into sugar; and by heat the same starch can be transmuted into gum. It is, therefore, not impossible that many of the more active vegetable principles may be in like manner formed, the more scarce from the more abundant. That some of the newly discovered bodies, at present, for convenience, called proximate vegetable principles, such as caffein, asparagine, piperine, and so on, are not *educts*, but *products*, is more than probable, when we find that they do not exhibit the specific effects peculiar to the substances from which they are obtained. Thus we learn from Mr. Brande, that coffee is narcotic, but caffein, as that celebrated chemist proved by

experiment on his own person, has (at least in scruple doses,) no sensible narcotic powers; and the effects of morphia bear no proportion to the effects producible by the quantity of opium consumed in its formation. Again, asparagine does not communicate to urine the peculiar odour which asparagus is invariably found to do; and, furthermore, piperine, the so-called proximate principle of pepper, is entirely destitute of pungency and heat. These, then, and many others, will probably be hereafter shown to be products of the chemist's operations; just as beer and wine are not, as they are often called, the juice of barley and the grape, but are produced, not educed therefrom, by fermentation; and alcohol, including brandy and spirit of every kind, is not educed, but produced from wine and sweetwort by distillation, or formed by condensing the vapours which rise from bread while baking.

It may be, then, (and I repeat it for the sake of the impression which a repeated proposition is designed to make,) it may be found hereafter more profitable to form many of these substances now known as the proximate principles of vegetables, directly from their elements, or indirectly from the mutation of common and abundant matters in the laboratory of the chemist, than to procure them intermediately from plants, the living elaboratories of nature; just as oxalic acid can be made from hair, gristle, and such like refuse matters; or produced by the distillation of sugar with nitric acid, instead of being educed from the Oxalis acetosella, corniculata, &c., where it naturally exists; or as prussic acid is now obtained from prussian blue, which can be made from almost any offal, at an amazing diminution of expense to what it could be educed from bitter almonds, cherry-laurel leaves, plum and peach kernels, &c. where the acid naturally exists, and which were once esteemed its only sources. Indeed, one great object of the vegetable world would seem to be, to anticipate the arts, and to provide numerous comforts and conveniences, such as clothes and shelter, nutritious food, and efficient medicines, for man, long before he was able to provide any for himself; and not for man only, but for the whole animal creation. Of this vegetable physiology affords numerous interesting illustrations: and although at present we contemplate the processes of nature but as through a glass, darkly; although we see but in part, and know but in part, still thus far we can perceive that, whether we sleep or whether we wake, whether we rest, or whether we toil, these indefatigable servants are labouring for our advantage; that they are

ever actively preparing and purveying sugar, starch, gluten, gum, cotton, wood, flax, hemp, and many other substances, with an alacrity, a perseverance, and a certainty which would be truly astonishing, were we not surrounded by such natural miracles, and did we not live in a world of wonders. Many of these works will doubtless ever remain inimitable by human art; to bounteous nature we must ever be indebted for her most precious gifts. We never can hope to penetrate the arcana of all her mysteries, although in some few particulars we can trace her course, and imitate her productions. Still, as we have already much lightened human labour by the substitution of brute strength, and superseded the use of many brutes by the adaptation of machinery, thus reclaiming much soil from the pasturage of cattle for the growth of food for man, and, by the introduction of steam and rail-roads, we shall reclaim much more; so it is not improbable that much of the labour of tilling the ground for the growth of human food may hereafter be avoided, by the immediate production of many substances from their elements, instead of deriving them intermediately through the culture of plants; or, at any rate, it is not improbable that we may so far advance in science and in art as to be enabled to convert the less into the more useful; the more into the less abundant: as wood into starch, worn-out flax, i. e. old linen, into sugar, and so on; and thus, if it were not for placing an important subject in rather a ludicrous point of view, we (in like manner as spiders and some other insects are said to devour their exuvial skins,) might hope to be enabled, after having worn out our clothes, to feed upon them, and to dine off as well as on our tables.

There is but one topic more with which at present I will intrude on your attention, but it is one which, as it most especially relates to the duties of the professor of botany, I should be inexcusable to let pass unnoticed.

Much of the obscurity attendant on the history of the effects of drugs is doubtless attributable to the careless manner in which plants have too commonly been collected and preserved, but often, still more to the errors which the ignorant and the frauds which the unprincipled commit. Hence, it is necessary that a continual check should be kept by the eye of science over the gatherers and venders of medicinal herbs. How often do we find briony root substituted for calomba, mullein leaves for foxglove, horn-beam for hops, marigold petals for saffron, cow parsley for hemlock, &c. Into one of our largest drug factories there once was brought a large quantity of Œnanthe crocata, which, had not a botanic

eye been casually cast upon the heap, would have been both sold and bought for conium; and had an extract, or tincture, or powder of its leaves been used, how disastrous might have been the result. This is not a solitary instance; such mistakes are unfortunately still too common: but henceforth they can less easily escape detection, since a knowledge of botany has been made a necessarily integral part of every medical education. Indeed, much as we may value the labours and researches of the physician and the chemist who investigate the medicinal properties and constituent principles of plants, the labours of both would be often of no avail, did not the botanist aid them in determining, by constant and decided characters, the very plants in which such principles are found, and to which such properties belong; as well as in what situation and under what circum-tances they should grow, at what seasons and in what states they should be collected; for all these will often much affect their potency and value: e. g. how different is the Apium graveolens growing in the light to the same plant when excluded from its access? how importantly does a wet or a dry situation affect the character of many umbelliferous plants; for the dry soil which increases the aromatic properties of some, diminishes the essential powers of others, while the wet situations which impair the aroma of these, enable those to eliminate to the full their active poisons. Again: many plants similar or nearly so, and which are frequently undistinguishable to a non-botanic eye, often possess very different properties: thus, to take only the most common and familiar cases, how important it is to distinguish Æthusa Cynapium from the true culinary parsley, the Lolium temulentum from other grasses, and so forth. Thus, how vainly should we seek in Cichorium Intybus for the hepatic influence of Leontodon Taraxacum; and yet, to superficial observers, so similar in their early states are these two very distinct plants, that they are being continually and constantly mistaken for each other; in fact, they form the pons asinorum of all inceptor candidates for botanic fame.

But I feel that it would be here a work of supererogation to illustrate more fully the utter practical inutility of many of the researches of the physician and the chemist, without the botanist would labour with them. What avails it that the physician knows that opium brings sleep, lulls pain, and stays the approach of many ills; that Peruvian bark cures ague; that jalap and scammony are drastic, and rhubarb a tonic astringent purge? What avails it that the chemist by analysis can prove that the sedative principle of opium is morphia, the tonic of cinchona, quinine; or what avails it that he proclaims

the equally important facts, that certain specimens of bark submitted to his examination contain a large, and others a small, portion of one or other of the active or inert principles, without the botanist could indicate the plants which yield them, and teach to distinguish those in which the active agents the most abound, and which consequently may be the most profitably employed? Say not that the merchant or the druggist will import and prepare them to his hand: this would indeed be trusting to a rotten staff, without they were themselves instructed in that science which alone can teach to distinguish those which are found less from those which are found more efficient in their use and productive of the active agents sought. Are crops to be cultivated and cargoes to be imported on chance or bare empirical presumption, and the first notice of error be in the disappointment of the physician at the non-efficacy of his prescription, or in the vain labour of the chemist to extract the essential parts?

Besides the certain diagnoses it affords, there is another advantage of botanical system, especially of the natural system, which, although it is very much perverted and abused, holds, in my mind, a rank of no mean importance: viz. the general rule, sanctioned by experience, that plants possessing the same botanical characters often contain the same chemical principles, and produce the same medicinal effects; not always, indeed seldom, in a similar degree, but most frequently in a graduated scale. The potency being traceable in the various instances from its least to its greatest accumulation, from its lowest to its highest stages of activity. Thus, the Lactuca virosa is highly acrid, while the Lactuca sativa is bland and esculent; the Cucumis sativus an agreeable food, while the Cucumis colocynthis is a powerful medicine; the Vegetable Marrow, Gourds, and Melons, mild and innoxious, while the Momordica Elaterium is so violent in its effects as almost to be esteemed a poison. Again, the Croton Cascarilla is a grateful stomachic, while the Croton Tiglium is a most violent cathartic; the Leopard's bane may be contrasted with the artichoke, and parsley with hemlock; the Solanum dulcamara, nigrum, and tuberosum, bear hurtful berries; while those of the egg-plant and the tomato, when cooked, form a wholesome food; the pea and bean are only flatulent, while the laburnum is a poison. And furthermore, so completely are the latent properties of some plants developed in other individuals of the same species, genera, and orders, while the notorious principles of those are overshadowed or become occult in these, that, did not instances occur in different varieties of the same species, and different species of

the same genera, they would seem to form more serious objections to the present distribution of the larger groups than they actually do. Thus, in one group, the Umbelliferæ, are found the venomous Conium, Œnanthe, and Cicuta, the harmless and nutritious Carrot, Parsnep, and Earth-nut, the stinking Galbanum, Opoponax, and Assafœtida, and the grateful aromatics, Cummin, Coriander, Carraway, and Dill. But, then, it should be remembered that, in the same genus, *Œnanthe*, while the roots of the species *Crocata* afford a deadly poison, those of the species *Pimpinelloides* form a wholesome food; and even in the same species, *Apium* graveolens, the cultivated Celery, is a harmless, while, in an uncultivated state, it is a deleterious plant. Once more, the milk-tree and the bread-fruit are associated with the Upas of Java; but the connexion is established between them by the figs; for, although most are harmless, one species of the genus *Ficus*, the Toxicaria, is, as its name imports, an acknowledged poison. Of these illustrations there would be no end, did time allow of the pursuit: on another occasion I may, probably, should it be sanctioned by the Council, bring the matter more at length before the Society, as it is one that requires much serious deliberation.

Vegetable physiognomy (if I may so express myself,) is a study well deserving cultivation; for it is most important to be able, on looking at a plant, to affirm, on principle, this may be eaten; that is a poisonous plant; or, again, those are suspicious vegetables: such knowledge, moreover, is not only desirable to have, but easy to be attained; and its practical utility has already been, in several instances, shown under circumstances of urgent need. It is, however, a skill in vegetable physiology, a knowledge of the laws of vegetable metamorphoses, which can alone enable us to decide such points with safety, and it is one of the most delightful of all botanical praxes to work out the relation of organs apparently, but not really, different, and thus to establish the *hetero-* and *iso-morphous* characters of plants, often improperly associated or severed; and to the rudimentary state of this branch of botany may be attributed those anomalies, those apparent paradoxes, which at present form exceptions to our natural schemes. But even this power of diagnosis may be, nay, it already has been many times perverted; and men, presuming on their wisdom, when they ought rather to avow their ignorance, have supposed their knowledge of these general laws so perfect and complete, that some have not scrupled to declare it *impossible* for nature to swerve from those they have defined, and refused to believe in the

possible occurrence of exceptions. Exceptions, and numerous exceptions, do, nevertheless, undoubtedly exist: these should, however, rather stimulate us to review our natural classifications, than to discard them altogether; should lead us rather to distrust our own performance, than to accuse nature for a moment of egregious error.

The true purposes and value of the natural and artificial systems, the aid they reciprocally afford each other, and the mode in which they may be most advantageously employed in the advancement of medico-botanical science, will form another very important topic, which, with the permission of the Council, I purpose submitting to the consideration of the Society. It is one that I consider of paramount importance, and the corelative utility of these two systems is a point for which I have long most ardently contended, and one which I have not neglected to inculcate, both in my lectures at the Royal Institution, and in the medical schools of Great Windmill street and St. George's Hospital: for I am sure that either, when alone, would be a most imperfect guide; while from them in conjunction we derive a clue which will be often found to lead to discoveries of the greatest brilliancy and value. Analogy will lead to experiment, and experiment, guided by analogy, will lead us to truth.

But, to conclude. In the botanical researches of this Society, it is evident that much discretion must be exercised, so as to render complete the medicinal history of the subjects we propose to illustrate, without including in our transactions topics foreign to medico-botanical science. Hence, although your professor of botany is sensible, no one more so, of the interest and importance of anatomical and physiological, as well as systematic and economic botany; and although he would consider himself wanting in his duty to this Society, were he to neglect any of these departments, all which bear, either directly or indirectly, on each other, still he would regard himself as perverting the objects of the Society, and wandering from the designs of its institution, were he to occupy the time of the meetings, or the pages of the Transactions, by any disquisitions on mere anatomical, physiological, or systematic themes. Many of them must, of course, engage his attention, as promising to throw light on medical botany; but whenever individual research has shown them to be impertinent thereto, they cease to be objects fit for presentation here. Their value to science, however, is not the less; at other times, and in other places, if presented, according to their worth so will they be esteemed: and this seems the more necessary to be stated, lest any should precipitately conclude that general botany

and medical botany are two different sciences; whereas, the one is but a part of the other, just as the fruit is but a part and production of the tree on which it grows. Hence, it must be evident that there are no means practicable of learning just so much, and so much only, of the philosophy of the vegetable world, as may be immediately applicable to the purposes of medicine, without at the same time studying the science as a whole; and this could alone efficiently be done by making it an independent subject for instruction, and enacting that an attendance on botanical lectures should henceforth become an essential part of every student's duty; for, without such knowledge, no medical education can be truly esteemed complete. The junction of botany to materia medica is absurd, as one must, of necessity, be neglected; for if, in the time allotted to the course, equal attention be paid to both, both will be imperfectly and unsatisfactorily taught. The courses must be kept essentially distinct, even when delivered by the same professor. If, in the infancy of physic, their union was tolerated, and botany studied merely because some plants afforded medicines, such an occultation no longer can be borne. Both sciences, by such a scheme, are injured, and keep each other, as it were, in thraldom. They are both sufficiently extensive and important to form separate studies.

The advantages resulting from the division of labour are too well known, and have been too long established, to need illustration here; and our Society, although akin to others, of which it would almost seem an emanation, has objects as important and distinct as those have from their antitypes. Thus, the Royal Society, which at first, and in our infant days of science, included in its fostering arms every department of philosophy, soon gave rise to other associations for the especial advancement of particular sciences: such as the Antiquarian Society, for archæological researches; the Linnæan Society, for the encouragement of natural history, whence the Horticultural, the Agricultural, the Medico-Botanical, and Zoological Societies have sprung. Thus, as science advances, each separate branch, arriving at maturity, quits the parent institution which nurtured it in youth; and hence there has arisen that brilliant galaxy of British associations, of which our country justly boasts, as the Royal Society, the Royal Society of Literature, the Royal Institution, the Medical and Medico-Chirurgical Societies, the Geological, Geographical, Astronomical, and numerous other learned associations, all striving in honourable warfare against indolence and error, all engaged

in a glorious crusade to recover the holy land of science from the infidel dominion of ignorance and sloth.

Gentlemen: In attempting to develop what he considers to be the legitimate objects of your Society; in attempting to trace, as it were in outline, what he considers to be the duties of his office, your professor of botany is aware that he has very inefficiently foreshadowed the object he had in view; and yet, insufficient as the sketch avowedly is, he is sensible that, in following it practically out, he shall often have occasion, as at the present moment, to claim your indulgence for much that has been done imperfectly, your pardon for much which has been wholly left undone: and yet he doubts not that, when zeal in your service is apparent, you will kindly, from your own resources, supply that which in him seems wanting.

Your professor of botany is likewise sensible how much he must depend, how much he must be indebted to the co-operation and separate exertions of his colleagues; yet he doubts not that, from their well-known ardour in the pursuit of science, they will always befriend him in completing those accounts of medicinal plants, from time to time to be presented to the Society, and for which duties none can be more competent than themselves: for thus conjointly we may hope to be enabled to collect such ample details, and such certain records, drawn from actual observations and experiments of the principles, properties, and powers of the vegetable materia medica, as may go far towards perfecting the practice of medicine, and rendering, as HOMER says,

> "A wise physician, skilled our wounds to heal,
> More worth than armies to the public weal."
>
> Ἰητρὸς γὰρ ἀνηρ πολλῶν ἀντάξιος ἄλλων,
> Ἰὼς τ' ἰκταμνειν, ἐπι τ' ἤπια φαρμακα πάσσειν'.

FEBRIFUGE BARK OF EL MALAMBO.

Some Account of the Febrifuge Bark of a Tree called El Malambo, the Produce of South America. By Wm. Hamilton, M.D. (Communicated in a Letter to Earl Stanhope, President of the Med.-Botanical Society.)

In the latter part of the year 1825, I received from my correspondent, Mr. Watts, his Britannic Majesty's consul at Carthagena, in Columbia, some samples of a febrifuge bark, called el Malambo, the produce of a tree with which I am wholly unacquainted. The samples consisted of pieces of the bark in substance, and an ounce of it in powder. As it reached me by way of Liverpool, and the carriage of the bark in substance would have been attended with considerable difficulty and expense, I requested a friend there to place this last at the disposal of some medical gentleman likely to do justice to its investigation, while the powder was transmitted to me by post. The bark in substance was accordingly given to Dr. Trail; of the result of whose trials I have never since been favoured with any report; and the powder I transmitted to Dr. Bostock, whose clinical researches pointed him out as a person likely to promote the objects I had in view. After some delay, I was favoured by him with the following letter, dated London, 11th December, 1825.

"Sir: I regret that so long a time should have elapsed since the receipt of your letter. When it arrived I was far from home, and have since that time been very particularly engaged. The account which is given of the bark is certainly very much in its favour, and its sensible properties are such as to render it probable that it may be a useful article of the materia medica. The only plan, however, to establish a point of this nature would be to send a quantity of the substance to some hospital, or dispensary, where a number of trials might be made of it by any person in that kind of extensive practice. Its taste and odour would make me suppose that it may be found useful in affections of the stomach and bowels, as is the case with colombo or angustura; and, even if its properties were found to be very similar, still it might be important to have a variety of articles. As I have no connexion with any medical charity, it will not be in my power to give you any assistance, and I think it will be best for you to apply to some practitioner in your neighbourhood.

"I am, sir, your most obedient,

"J. Bostock."

Mr. Watts, in his letter, dated Carthagena, 19th July, 1825, says,

"I wish particularly to draw your attention to a valuable production of this province: it is the bark of the Malambo tree. I enclose you a little of the powdered bark; and Mr. Byrne has charge of a parcel containing some pieces of the bark. You have also enclosed a description of this bark, and its qualities, given me by Don Jorge Lopez, the apothecary, my neighbour, with a translation. I shall be glad to hear what opinion may be formed in England of this bark, and whether it is likely to become an article of exportation from this port; for it can be procured in any quantities. I enclose also another description of the Malambo tree, extracted from another rare and valuable Spanish work in my possession, with a translation.

The following are the accounts referred to:

"*Descripcion del Malambo, por Don Jorge Lopez.*

"Sedia, en la provincia de Cartagena, un arbol de la misma altura de los Quinos, nombrado Malambo, cuja corteza en mi concepto tiene qualidades mas recomandables que la Quina: ella abunda de un aromatico tan constante y penetrante que jamas lo pierde, y por supuesto abunda tambier de partes gomosas muy utiles, à mi ver, à la naturaleza; es indigena de esta provincia, y se encuentra con abundancia. Su corteza as quehabla, y crea que si se dedicase los facultativos à hacer usa de ella, la Quina perderia su concepto. En este pais la aplican à diversos males con ventaja conocida, en particular para los pasmos, heridas, inflamaciones, males del estomago; a mi ver producivia un efecto admirable en la hidropesia, y fiebres malignas; por varias observaciones que se ban hecho es effeax para las asmas, reumatisma, disenteria, supresiones de menstruas; en fin, en el pais, y en particular en los campas, es un remedia general aplicado con felix suceso en todas las enfermedadas referidas."*

"*Descripcion del Malambo, (extracted from a rare Spanish work.)*

"El tercero es el Malambo, cuja corteza aromatico es un antispasmodico eminente, de un amargo muy activo, febrifugo, y

* *Translation of the Description of the Malambo, given by Don George Lopes.*

There is found in the province of Carthagena a tree of the same height as the Quinas, (bark-trees,) named the Malambo, the bark of which, in my opinion, possesses more valuable qualities than even the Quina. It abounds with an aromatic so strong and so penetrating, that it never loses it under any circumstances; and, of course, it likewise abounds in gums highly useful, in my idea, to humanity. It is indigenous to this province, and is found in great abundance. It is to the bark of the tree which I allude, and I really believe that, were the faculty to make use of it, the Quina (Peruvian bark) would fall in their estimation. In this country it is applied to several diseases with well-known success; in particular, in cases of spasms, wounds, inflammations, diseases of the stomach. In my opinion, it would produce the happiest results in cases of dropsy and malignant fever. From several other observations, it is also found highly efficacious in asthmas, rheumatisms, dysentery, and suppression of the menses. In short, in the province, and particularly in the country parts, it is a remedy applied with the happiest success in all the cases enumerated above.

astringente. Lo hay con abundancia en la provincia de Santa Marta, donde lo aplican para curar pasmo, calenturas, intermittentes, y la dysenteria; y tambien se encuentra en varios territorios de esta provincia. Se hacen algunas extracciones de su corteza par la Habana, y alli lo usan con mucha suceso contra el pasmo, à que son muy propensas los negros; y *desde que tien este specifico casi no muera ninguno dee!.* Aqui no se aplica para nada, y hace pocos dias hemos visto morir un joven apreciable, par no haberle dado en tiempo esto remedio. Es un vegetal importantissimo, que merece la atencion del gobierno por las virtudes que dexamos expuestas, y aplicaciones que se hacen de el en Santa Marta; como y por color y olor de su corteza, tenemos razones para creer sea del genero Cusparia, ò Quina de la Angostura, de que se compane parte del receta del difunta Dr. Mutis, para curacion de la dysenteria, y na duda mos aseguar que, a falta de esta, puede stiplir la corteza del Malambo."*

Such is the account given by the late canon Don Jose Ignacio del Pombo, the friend and pupil of the lamented and learned Mutis, in his rare and almost unknown work on the Natural Productions of the Province of Carthagena.

Having requested a further supply of Malambo bark for experiment, I at length received a second supply of some pounds, in the summer of 1827, at a time when indisposition had confined me for some months to the house. I in consequence applied to my friend Dr. Cookworthy, whose practice at the dispensary pointed him out as a person likely to promote my views, especially as he had facilities for getting it reduced to powder, which were not within my reach; and I placed the whole quantity, with the exception of one piece, (fragments of which accompany this paper,) at his disposal. The bark was in pieces of from a foot to eighteen inches in length, about two inches in breadth, and three eighths of an inch in thickness; the outer and thinner coat was externally

* *Description of the Malambo. (extracted from a rare Spanish Work.)*

The third is the Malambo, the aromatic bark of which is a powerful antispasmodic, a very active bitter, febrifuge, and astringent. It abounds in the province of Santa Martha, where it is applied to the cure of spasm, intermittent fever, and dysentery; it is likewise found in several districts of this province. It is sent the bark, in some quantity to the Havana, and there it is used with much success in cases of spasms, to which the negroes are very subject; and since they are in possession of this specific scarcely any die of it. Here no use whatever is made of it, and but many days ago we have seen a very amiable young man carried off, from not having taken this remedy in time. It is a most important vegetable, and deserving the attention of government, for the virtues we have enumerated, and the use made of it in Santa Martha. From the colour and odour of its bark, we have reason to believe it is of the genus Cusparia, or Quina of Angostura, of which is in part composed Dr. Mutis' receipt for the cure of dysentery, and we have no doubt that the want of this might be supplied by the Malambo.

of an ash colour, marked with irregular longitudinal furrows, and separating from the inner or thicker coat, which had more of a ligneous texture, or any attempt at breaking the bark, by bending the fragment marked *a*, exhibits both the inner and outer coats of the bark united; on fracture, the smell was agreeably aromatic, and the taste not unpleasantly bitter. I failed in my expectations of obtaining a satisfactory report of its effects from Dr. Cookworthy, and could only learn from him, in conversation, that it was as effectual in arresting the progress of intermittents as the cinchona; but the bulk of the dose rendered its exhibition objectionable, especially since the introduction of quinine, a few grains of which produced all the effects of as many ounces of either the Peruvian or Malambo bark. I urged him in vain to get his brother to analyse a portion, and determine the nature and quantity of its active constituents; and I found that, by trusting to others, I had again lost the opportunity which this second supply afforded me of investigating its useful qualities. I had, however, retained one piece of the bark, which I treasured up, in the hope of some future opportunity offering for getting it analysed; and this piece I shall gladly place at the disposal of the Society.

I was equally unsuccessful in my applications to Mr. Watts for specimens of the plant which produced it; and hence I am unable to throw the smallest light upon the genus to which it belongs, or advance anything beyond the merest conjecture. That it does not belong to any of the true cinchonas, which differ from the Exostemas in having their stamina included, seems probable from Humboldt's observation, (*Pers. Narr.* vol. iii. p. 29, *note*,) that almost all the cinchonas of the inferior regions are Exostemas, not true cinchonas, the properties of which differ considerably from those of the genuine cinchonas of the Andes; while, from his observation of the fact of his not having found a single specimen of Exostema during his long abode on the coast of Cumana and Caraccas, the banks of the Apuri, the Oronoko, and Rio Negro, in an extent of country of four thousand square leagues, it seems equally improbable that it belongs to the genus Exostema. It is probable therefore that it belongs either to the febrifuge bark-tree described by Dr. Hancock, the Cusparia of the banks of the Oronoko, the Machaonia, the Cuspa of Humboldt, a nondescript plant, the inflorescence of which Humboldt has never been able to procure, notwithstanding its blossoming at the end of November, and being abundant in the province of Cumana; or perhaps a new and distinct genus.

Humboldt describes his Cuspa, which, he says, must by no means be confounded with the Cuspare (Cusparia febrifuga) of Angostura, as a tree of not more than fifteen or twenty feet in height, with alternate, oval, entire leaves destitute of stipules, and differing in this respect from all the trees of the family of Rubiaceæ, to which the Cinchonas and Exostemas belong, and yielding a very thin pale-yellow bark, possessing more bitterness, but at the same time less disagreeable, and agreeing better with the stomach than that of the true cinchona, and possessing great febrifuge powers. This description by no means corresponds with the Malambo bark, which is rather thick, of a cinereous colour, agreeable to the smell, and of a bitterness not only less, but totally different in taste than the bark of any of the cinchonas. It also appears, from the account of Don Ignacio de Pombo, to be a powerful and valuable antispasmodic; and the fact of its having, from the first period of its introduction into Cuba, completely checked the mortality previously so frequent among the blacks, from the attacks of a spasmodic disorder to which they were subject, "*desde que tien este specifico casi na muere ninguna de el,*" is an important recommendation, which merits further investigation.

Possibly it might even be found of service in arresting the progress of hydrophobia, some of whose most distressing symptoms are evidently of a spasmodic character. Spasm, the term applied by the prior to the complaint so prevalent, and formerly so fatal, among the negroes of Cuba, is so vague a denomination as to leave us in a state of uncertainty as to the true character of the complaint; but tetanus, to which negroes are often subject, is probably the disorder to which he refers, and is one which bears considerable analogy to hydrophobia; and it is this circumstance which suggested to me the possibility of this bark being useful, if only as a palliative, in this latter and still more melancholy affliction.

I cannot sufficiently regret that my information does not enable me to furnish anything in the shape of positive information, beyond the statements furnished by the prior and the Carthagena apothecary, whose exaggerated description is only calculated to provoke a smile. Should circumstances ever permit of my visiting the regions which produce it, I hope to be able to lay before the Society more precise intelligence respecting it, accompanied by a botanical description and specimens.

Postscript. I have no distinct recollection of having ever communicated to your lordship a striking instance of the

powerful effects of the seeds of the Hibiscus Abelmoschus, or Musk Ockra, in counteracting the fatal influence of the bite of venomous reptiles, related to me in one of his letters by Mr. Watts, our public-spirited consul at Carthagena, as having fallen within the immediate limits of his own observation; I shall therefore repeat the facts of Mr. Watts' communication here.

A peasant, resident on the heights of La Papa, near Carthagena, being engaged with his dogs in pursuit of a hare, a dog, the best of his number, had the misfortune to be wounded by one of the most venomous snakes of that district. The dog instantly dropped, foamed at the mouth, and the wounded part began to swell. The peasant, regarding the case as desperate, at first resigned the dog to what he imagined to be his inevitable fate; but returning home, and recollecting that the animal had been a favourite, and the best of his pack, he determined to revisit the spot, and ascertain the degree of hope to be entertained. On reaching the spot, he found the animal stretched out, unable to move, and evidently in great agony: taking him up in his arms, he hurried home with him, and immediately rubbed the swoln and wounded part well with the bruised seeds of the musk plant, or Almisdenia, as the Hibiscus Abelmoschus is called there; forcing a considerable quantity at the same time down the animal's throat, with such success, that symptoms of amendment rapidly appeared, and the dog, at the date of Mr. Watts's letter, was perfectly recovered; although nothing is more certain than that his death would have been inevitable, had he been left to his fate. Yet here the application was made under circumstances by no means favourable, since much time had necessarily been lost, and the symptoms of constitutional affection from the action of the poison had actually begun to exhibit themselves.

The Musk Ockra is a common plant in most of our West-India islands, and its seed could be easily obtained from thence to almost any amount. It certainly merits further investigation, and will, I trust, attract the notice of some of the scientific members of the Society. A saturated tincture of the bruised seeds would, in all probability, be the most convenient form for internal exhibition.

ESSENTIAL OIL OF LEMONS.

On the Use of the Essential Oil of Lemons in various Inflammations of the Eye; with Cases. By JOHN FOOTE, jun. Esq., L.S.A., A.M.B.S.

(Read June 11th, 1833.)

FOR several years past the use of stimulants in various external inflammations of the eye has been gradually gaining ground. An opinion formerly prevailed, not only among the public generally, but also very extensively in the profession, that the eye was a very tender organ, and would not bear rough handling. This idea tended in a great measure to retard the period when stimulant applications were first employed, and to induce great caution in their use. It was formerly the practice, in many inflammatory affections of this organ, to bleed, cup, and leech, to such an amount as frequently even to do serious injury to the constitution of the patient; such mischief indeed, that he would be years in getting over it, and perhaps might never entirely recover from its effects. Even lately, within a few years, a work has been published by Mr. Lawrence, one of the surgeons to St. Bartholomew's Hospital, on the Venereal Affections of the Eye, recommending, in the gonorrhœal ophthalmia, that blood should be drawn as long as any could be obtained from a vein! And what does he present us with as the results of his depleting practice? Truly, a melancholy list of lost eyes. On the other hand, if we look to the reports of Mr. Guthrie on the stimulant plan of treatment in the same affection, we find success attend his practice. I have seen about six or seven cases of this highly dangerous ophthalmia; they have been all treated on the stimulating plan, and have all invariably ended successfully. Having been a pupil at the Royal Westminster Ophthalmic Hospital for a period of nearly five years, I have had ample opportunities of testing the relative value of the stimulating and depletory plans of treatment, and, were all things equal, the fact that the former saves the patient from that abstraction of blood which is frequently urged to a great amount, would alone be sufficient with me to give it the preference: but it has other advantages; it effects a cure in a shorter period, and does not leave behind it, as the antiphlogistic plan generally does, a low or chronic inflammation of the parts, requiring a stimulant application to remove it.

To Mr. Guthrie belongs the credit of having introduced,

and followed up to a very great extent, the plan of stimulation in acute external inflammations of the eye. Before his time, the vinum opii, solutions of nitrate of silver in distilled or rose water of various strengths, the unguentum zinci, or the unguentum hydrargyri nitratis dilutum, were employed, but not extensively, in the chronic inflammations; while Mr. Guthrie has used them, and stronger stimuli, in the acute stage of the same affections; a step, for the boldness of which he would have been severely blamed, but for the success with which his efforts were crowned. On the continent, Graafe and Walther, and some other surgeons, employed the solution of the nitrate of silver in purulent ophthalmia; but this application has the inconvenience, that, when employed for any length of time, it has the effect of staining the eye. This was first pointed out in print by Dr. Jacob, in the Dublin Medical Transactions, but was constantly inculcated at the Ophthalmic Hospital in Warwick street, to my certain knowledge, both by Dr. Forbes and Mr. Guthrie, the physician and surgeon to that institution.

In the May of 1827, Mr. Guthrie pushed his inquiries still further: he caused an ointment to be made with ten grains of the nitrate of silver to the drachm of simple ointment, and tried this in numerous cases. After several formulæ, variously modified, had been essayed, he finally decided on a preparation containing the argentum nitratum with Goulard's extract, mixed up with lard; he also employed an ointment made with the oxymuriate (the bi-chloride) of mercury, and another composed of simple cerate and the sulphas cupri, five grains to the drachm; but these latter he soon abandoned. These applications were employed by him in the various ophthalmiæ, acute and chronic, affecting the conjunctiva, the cornea, and the sclerotica; also in cases of nebula; but in these latter affections the milder stimuli are more properly required, as the disease generally takes a long time for its removal, and a milder, and at the same time a more frequently renewed, stimulus has a greater effect in exciting the absorbents to action. The celebrated French surgeon, Dupuytren, employs in this disease a combination of equal parts of calomel, sugar, and oxide of zinc, blown into the eye. Various other surgeons have tested the powers of these applications, and all speak in their favour; some more sparingly than others. Mr. Mackenzie, of Glasgow, is one of those who do not speak so highly of these remedies as they deserve; which need not excite our admiration, as he has hitherto employed a bad preparation. Mr. Lawrence has

every wish to give the stimulant treatment a fair trial, but he has not as yet employed it in any case.

The theory on which this peculiar plan was first introduced was founded on an opinion of John Hunter's, which has become almost an axiom in medicine, viz. "that no two diseases can exist at one and the same time in the same constitution." That which he applied to the system generally has been adopted in reference to a single organ of that system: in consequence, it was conceived that, by exciting a more severe inflammation in the eye than that which already existed, but at the same time of shorter duration, a cure would be effected of the original malady. Whether this theory be or be not a valid one, it matters little, so long as the treatment deduced from it be successful; and that it has hitherto been attended with success, is amply proved by the records in the various medical journals of this and other countries, and by the case-books of the various ophthalmic institutions, where it has been fairly tried. In saying this, I am not alluding to any particular formula, to any peculiar preparation, but to all those remedies which come under the general head of external stimulants. Neither do I mean to aver that in no cases has it been unsuccessful: in some few, probably from idiosyncrasy, or extreme nervousness, the stimulant application appears to have done harm, and was necessarily abandoned; but these serve only to form the exception to the rule.

Under such circumstances, my ophthalmic lore having been acquired in a sthenic school, if I may so term it, it will scarcely be wondered at that, knowing from experience the stimulating properties of the essential oil of lemons, when in contact with the conjunctiva, I should be ready to admit its powers in the treatment of ophthalmia, and anxious to test its properties. For this purpose, the Royal Westminster Ophthalmic Hospital offered me an ample field.

In the year 1840, the following paragraph, which appeared in the *Collectanea* department of the London Medical and Physical Journal, under the head "Surgery," first directed my attention to this essential oil as a remedial agent in affections of the eye.

"*Efficacy of Lemon-juice in some Diseases of the Eye.* (From the *Journal für Chirurgie und Augenheilkunde.*) M. Wochtz thus employs this novel remedy. He cuts a slice of lemon-peel about an inch long and half an inch broad, places the outer part opposite the affected eye, the eyelids being opened, and by slight pressure squeezes out the little drops of volatile oil contained in the tissue of the rind into

the eye. The sensation produced is acute, and continues for an hour or two. If the pain caused should be severe, cold applications are to be employed. The oil of the lemon-peel appears to increase thecapillary circulation, and to cause the absorption of morbid depositions.

"From experiments which have been made at La Charité at Berlin, it appears that the following diseases are remedied by this treatment: 1. Inflammations of the eye which are passing into a chronic state, and which affect the external parts, as the conjunctiva, cornea, or sclerotic, particularly if the small vessels are turgid. M. W. has also found the remedy useful in rheumatic, gonorrhœal, and scrofulous ophthalmia. 2. In pannus and pterygium. 3. In albugo and opacity of the cornea. 4. When the texture of the cornea has lost its healthy density, and becomes soft and spongy. The remedy may be employed frequently during the day, depending upon the degree of irritation it produces. M. W. relates seven cases of cures of various diseases of the eye effected by this treatment."

There are perhaps few persons who are unacquainted with the stimulant properties of the essential oil contained in the follicles of the bark or rind of the lemon or orange, as, in peeling these fruit, it frequently happens that a follicle or two burst, and a particle of the essence gets lodged in the conjunctiva. It was probably an accident of this kind which first induced Mr. Werlitz to try its powers in inflammations of the eye, and thus add another remedy to the list of the ophthalmic materia medica. Having obtained the permission of Mr. Guthrie at a period far antecedent to the time when I actually availed myself of it, I have recently given this essential oil a trial at the Ophthalmic Hospital, in various inflammations, more especially the catarrhal, which the peculiar constitution of the atmosphere at the present time has rendered epidemic. In the majority of cases in which I applied it, I found it successful; in a few it appeared not to be of use, and the application of cupping-glasses to the temple was ultimately required. It generally caused pain, varying in duration from half an hour to three, and also in intensity in different individuals. In one person, a gentleman of the medical profession, having increased vascularity of the eyelid, and who had been accustomed to have the vinum opii applied, it excited pain to such a degree that he declared his eye felt as if on fire; but this unpleasant symptom went off in about ten minutes; another person, to whose eye I applied it, said that the pain it occasioned was trifling, and not at all to be compared with that which arises from the application of the vinum opii.

Such is the difference of sensibility in different individuals; and I may add, that both experienced benefit from it. I have deemed it necessary, in general, to administer aperients and other medicines, in some of the cases in which I employed it, according to the severity of the symptoms indicating general irritation.

M. Werlitz does not apply the oil at all in a scientific or satisfactory manner. His method of squirting the essence from the rind appears to me to be both rude and coarse, and could scarcely be employed in private practice; I have therefore adopted another way, which I shall shortly mention. In strumous ophthalmia, it is exceedingly difficult, from the tumefaction of the eyelids and the restlessness of the child, so to separate the eyelids as to obtain a view of the eye itself, and, under such circumstances, it would be next to impossible to keep them open a sufficient length of time, until the operator shall have properly injected the drop. In the trials to which I have subjected it, I have invariably used the essential oil of lemon of the shops, and have dropped it in the eye in the same manner that the vinum opii is applied, namely, with a quill cut in the shape of a pen, but rounded off, instead of having a point. It requires to be dropped in very speedily, as it rapidly volatilizes. I have always, when it has been in my power, applied the essence once a-day, but it has occasionally happened that the patients have neglected attendance for two, three, or more days, and have then returned much worse than they were previously. I may also add, that occasionally, even when they were regular in their attendance, a relapse would take place; and this occurred in a most remarkable manner, on Saturday the 1st of June. On the preceding day, several cases were reported as rapidly improving, or nearly convalescent, and yet, on the 1st, with perhaps one exception, they returned with a fresh attack. Had only one or two cases relapsed, I might have attributed it to negligence and inattention to my directions on the part of the patient, or to exposure to cold; but, as by far the majority of the cases were similarly affected, I could not avoid considering it as something remarkable, and dependent on some change in the atmosphere.

In summing up, I may say, I have employed the essence of lemons in various acute and chronic inflammations, in opacity of the cornea, and the purulent and muco-purulent ophthalmia, but not in pannus, pterygium, or albugo; cases of the latter description not having come under my care latterly. I should consider, from the nature of the complaints, that it may prove advantageous in albugo, but in regard to the other

two diseases, I should be very dubious of its powers. On the whole, I believe it to be preferable to the vinum opii in all cases where a stimulant is indicated, and equal, in many, to the unguentum argent. nitratis, but falling short of it in others; while the great facility with which it may be obtained and applied, renders it a great acquisition to the country surgeon, who would find it inconvenient to spend a couple of hours over the mortar in pulverizing the nitrate of silver, with the prospect that, when he has made his ointment, he may be unable to use it, from the circumstance that he has left a few granules of the nitrate not sufficiently fine, and which no after-treatment will be able properly to reduce. I have tried it in about five and twenty cases; and shall subjoin the detail of a few, with which I shall conclude.

Case I. *Catarrhal Ophthalmia, treated by the Oleum Limonum.*

Sarah Lawrence, ætat. twenty-three, admitted the 17th May, 1833. Catarrhal inflammation of the left eye, of a month's duration. The disease was not noticed for the first week, but was afterwards treated by a surgeon; leeches were applied to the temple, a blister behind the ear, lotions, and medicines internally; she says the eye improved a little under the treatment pursued. She complains of pain in the eye and parts adjacent, so severe as nearly to prevent her sleeping at night; considerable lachrymation, tears scalding; vision misty; the eyelids used to adhere in the morning, but not for the last two or three days. Her general health is somewhat affected by the disease, appetite failing, tongue rather furred, bowels open. The conjunctiva of the ball and eyelids injected and inflamed, the affection of the lids being the more intense; a pustule forming on the lower margin of the cornea. The vessels of the conjunctiva of the ball are more of a pink colour, but do not form the zone around the cornea. Neither the cornea nor the iris are affected.—App. Ol. Ess. Limon. gutt. ad ocul.: R. Magnes. Sulphatis ℥i.; Infusi Sennæ comp. lb.ss. solve. Capiat coch. larga ij. omni mane primo.

20th. The pain and inflammation are diminished, and vision is improving; the pustule is small; bowels opened by medicine.—Rep. Ol. Limon. et Mist. purgans.

21st. Inflammation very much diminished.—Rep. Ol. Limon.

22d. The pain has nearly gone; vision considerably improved.—Rep. Ol. Limon. et Mist. purgans.

23d. Vision is as perfect as ever. Slight inflammation of the eyelids still exists.

27th. Is going into the country. To have the vinum opii dropped in occasionally.

Case II. *Catarrhal Inflammation in a Strumous Constitution, treated by the Oleum Limonum and Alteratives.*

William Minnifit, ætat. three, was admitted May the 17th, 1833; a child of strumous constitution, and apparently in ill health. The conjunctiva of the eyelids and ball of the left eye are very much inflamed, the cornea slightly participating, and having a small speck near the centre; there is considerable lachrymation, tears scalding, attended with pain and intolerance of light; he cannot open the eye. The bowels are not regular, and he is rather feverish.—App. Ol. Limon. R. Hyd. cum Cretâ, gr. ij.; Pulv. Rhei, gr. ij. M. fiat pulv. sumat i. nocte maneque.

20th. His vision is improved, and he can bear the light better; the pain and inflammation are diminished; bowels open.—Rep. Ol. Limon. et Pulv.

22d. Improving.—Rep.

27th. Has not attended since the 22d. The inflammation is greater, and all the symptoms are materially increased in severity. —Rep. Ol. Limon. et Pulveres, nocte maneque sumend.

31st. Rather better.—Cont.

June 3d. Nearly well.—Rep.

5th. Dismissed, cured.

Case III. *Pustular Inflammation, treated by the Ol. Limon.*

Frederick Plumber, ætat. six, admitted 17th May, 1833; a child of a strumous habit of body. Has pustular inflammation of the right eye, of five days' duration. There is a pustule on the outer, and another on the inner margin of the cornea, attended with inflammation of the conjunctiva of the ball and lids. There is not much pain at present. Has merely applied a bread and water poultice, and taken aperient medicine.—App. Ess. Limon. Pulv. Hyd. cum Cretâ et Rheo i. nocte maneque sumend.

20th. Is nearly well; the pustules are scarcely visible.—Rep.

22d. Dismissed.

Case IV. *Pustular Inflammation, treated by the Ol. Limon.*

Mary Mirvin, ætat. six, admitted May 24th, 1833, with pustular inflammation affecting the lower margin of the cornea of the left eye, attended with vascularity of the conjunctiva covering that part; considerable lachrymation and pain. The disease has existed a month; child otherwise healthy.—App. Ol. Limon. Pulv. Hyd. cum Cretâ, cum Rheo, n. m. sumend.

27th. There is less pain, and vision is improved; the pustule is smaller, and the vascularity is diminished.—Ol. Limon. et pulveres.

27th. Improving. Bowels not open.—Rep. Oleum Limon. R. Magn. Sulph. ℥i. fiant pulveres tres, sumat i. p. r. n.

June 1st. Nearly well.—Rep.

3d. Rep. Oleum, et Magnesiæ Sulphas.

7th. Dismissed.

Case V. *Opacity of the Cornea, treated by the Ol. Limon.*

Fanny Folkes, ætat. eleven, was admitted an in-patient in the Westminster Hospital, with opacities on each cornea. Her eyes had been bad for the period of two years, the disease being the result of inflammation. Her vision is very imperfect; she cannot distinguish letters. The opacities are nearly central, attended with a general muddiness of the cornea. Has been under treatment for some time, but without deriving any advantage. There is not any inflammation of the eye, or its appendages, at present.

June 7th, (ten days after admission.) The essential oil of lemons has been applied daily, with the effect of producing considerable smarting pain, lasting about a quarter of an hour. The general muddiness of the cornea is much diminished; the nebulæ are not so evident as when she was admitted, and her vision is so much improved that she can distinguish the letters, and spell them, on her admission-ticket. Her bowels have been regulated by medicine occasionally.—Let her continue.

Case VI. *Muco-purulent Ophthalmia, followed by Erysipelas of the Face, extending to the Eyelids, treated with the Ol. Limon. and the Tartar Emetic.*

Timothy Fitzpatrick, ætat. fifty, a man of a sanguineous temperament, short and stout, has been in attendance a considerable period.

About two years ago, he lost the sight of the left eye from inflammation, in consequence of which the cornea and other parts became disorganized, and the cavity of the anterior chamber lost, the cornea lucida being completely flattened. He has been an out-patient occasionally several times since, for attacks of inflammation affecting the conjunctiva covering the ball and lining the eyelids.

During the night of the 14-15th of May, 1833, he suffered from a fresh accession of pain in the left eye, attended with a considerable discharge, the pain chiefly at the outer canthus. He does not know any cause for this attack; says he has not caught cold lately, nor has anything got into the eye that he is aware of. On examining the organ (May 15th,) there appears considerable inflammation of the conjunctiva of the ball and lids, that membrane being exceedingly vascular and chemosed; a fluid of a muco-purulent character is constantly and rapidly secreted; the pain continuing at the outer canthus. [Several symptoms are here either wanting or masked, in consequence of the loss of vision; such as the aversion to, and the inability to bear, the light, the degree to which vision is affected by the inflammation, &c.] The tongue is covered with a whitish fur, and the bowels are regular.—Applicatur gutta Olei Essentialis Limonis. Capiat Magnesiæ Sulphatis ℥i. mane.

16th. The application of the drop did not cause much pain, nor did it last any length of time. The eye felt easier for some time after, the original pain in the canthus beginning to return about nine in the evening, when he went to bed. He could not sleep, from the pain. The discharge appears to be rather increased, and there is a blush of erysipelatous inflammation on the left cheek, extending to the eyelids, which are tumefied and inflamed externally and internally; the cheek and eyelids are puffy; skin hot; no pain in the head, but it continues at the outer canthus, rather however as soreness than actual pain; the tongue is covered with a dirty-brown fur; a slight acceleration of pulse. The salts operated well.—Rep. Ol. Limon. App. Ung. Cetacei palpebris nocte. Aqua tepida sæpe indies injicienda. R. Antimonii Tartarizato, grana duo; Magnesiæ Sulphatis, unciam; Aquæ, uncias octo. Solve, fiat mistura. Capiat cochlearia ampla duo omni horâ.

17th. The drop gave him considerable pain. He passed a better night. There is not so much tumefaction of the lids, nor general inflammation; he thinks that there is more discharge, but that it is thicker. The mixture opened the bowels freely, and excited slight nausea; tongue furred.—Rep. Ol. Limon. Lotio Aluminis sæpe utend. Rep. mixture, sumatur dosis omni bihorâ.

19th. The tumefaction has nearly entirely subsided; he can open the eye very easily; sleeps well; the inflammation of the eye abating, and discharge lessening; the erysipelatous blush has almost gone, as likewise the discoloration of the eyelids; tongue continues furred; bowels open.—Persistet in usu omnium medicamentorum.

22d. Improving.—Rep.

From this date to the 3d of June he gradually improved; there remained then very little discharge, and that depending on a granular state of the eyelids, which has latterly come on. No pain or uneasiness.—Ordered the Sulphas Cupri, to remove the granulated appearance of the lids.

Case VII. *Purulent Ophthalmia, dependent on Leucorrhœa in the Mother; Use of Ol. Limonum.*

David Davis, aged six weeks, was admitted May 22d, 1833, with purulent ophthalmia of both eyes, of five weeks' duration. The mother has had leucorrhœa for some time previous to parturition, and it still continues on her. The child's eyes appeared weak soon after birth, but she could not ascertain the exact period when they became inflamed. Within a week however after birth, purulent matter, of a proper consistence and yellowish colour, was secreted abundantly from each eye, the lids at the same time being very much tumefied. The mother has never done anything for them, save cleansing them now and then with warm water. There is at present considerable discharge of a tenacious, yellowish

matter, attended with inflammation of the eyelids, which are not so tumefied as they were; the inflammation extends, but in a milder degree, to the ball of the eyes; on the centre of the corneæ there is a speck already formed. The child can open the eyes, but not easily; its health has suffered very much; the bowels are open, but the stools are of a dark colour, and the little patient is very much emaciated.—Applicetur Oleum Limonum ocul. sing. Pulv. alter. i. nocte maneque sumendus. To continue the injection of warm water between the eyelids, and that frequently.

24th. The discharge is very slight; can open the eyelids easily; the eyeballs appear to be nearly clear from inflammation, which is also lessened on the lids. The bowels are open; stools of a greenish colour. It appears that, by mistake, the wrong powders were given, and the child had a large dose of the tartarized antimony, instead of the alterative powder which had been directed.—Rep. Ol. Limon. Pulv. alterat. ss. n. et m. sumend.*

25th. Is still much affected by the powders, the same kind having been given as at last report. There is rather more discharge from the left, but very little from the right.—Rep. Ol. Limon. Not to have any powders.

27th. A little better.—Rep. Ol.

28th. Discharge lessened; is altogether improved.—Cont.

31st. Nearly well.—Rep.

June 1st. There appears to be an increase of discharge, and the child is not so well.—Rep.

4th. There is more discharge and inflammation, and the lids are again tumefied.—Rep. Ol. Limon. Hyd. cum Cretâ, gr. ij. Pulv. p. r. n. sumend.

6th. Discharge much diminished.—Rep.

7th. Very little purulent matter secreted.—Cont.

9th. Nearly well.—Rep.

* When this order was given, the mistake already recorded was not ascertained to have happened.

MEDICAL PLANTS MENTIONED BY SHAKSPEARE.

Observations upon some of the Medical Plants mentioned by Shakspeare. Communicated by SAMUEL ROOTSEY, Esq., Corresponding Member of the Medico-Botanical Society.

Hemlock. I was lately inquiring the particular species which the Welsh call Cegyd, and was told it differed from hemlock. Hemlock, they said, grew in gardens, like parsley; but Cegyd grew in moist hedges, with a smooth spotted stalk. Shakspeare likewise speaks of hemlock as a corn-field plant, which can be no other than the Æthusa Cynapium.

> "Crown'd with rank fumiter and furrow weeds,
> With harlocks, *hemlock*, nettles, cuckow-flowers,
> Darnel, and all the idle weeds that grow
> In our sustaining corn."—*Lear*, act iv. sc. 4.

In another place he is very precise in distinguishing it from *kecksies*, by which name I have always heard the Conium maculatum distinguished in Essex.

> "Her fallow leas
> The darnel, *hemlock*, and rank fumitory
> Doth feed upon, while that the coulter rusts
> That should deracinate such savagery.
> The even mead, that erst brought sweetly forth
> The freckled cowslip, burnet, and green clover,
> Wanting the scythe, all uncorrected rank
> Conceives by idleness, and nothing teems
> But hateful docks, rough thistles, *kecksies*, burs,
> Losing both beauty and utility."—*K. Henry V.*, act v. sc. 2.

This word *kecksies* is evidently the Welsh Cegyd, and the Latin Cicuta.

It was the root of hemlock which was used as an ingredient in the poisonous cauldron of the Witches in *Macbeth*.

> "The root of *hemlock* digg'd in the dark."—Act iv. sc. 1.

As the Conium maculatum is likely to be meant in this place, I think the Æthusa should be called by Withering's name of *lesser hemlock*.

The etymology of the word hemlock is obscure. I consider that the word is derived from its ill smell, and consists of the aspirate H prefixed to the radix, which in Greek is Moly, from μολυνω, to *moil*, or defile. Hence it is properly applicable to the Allium Moly, and the Ligusticum Peloponense, which latter I suppose to have been the Conion of the Greeks.

Fumiter, or *Fumitory*. This double orthography of our poet illustrates the etymology of this word. It takes its

name of Fumus terræ from its almost aerial lightsomeness and glaucous colour.

Thistle. The word thistle seems to belong to the Dipsacus, called in English Teasle, and in Latin Carduus, from its having the shape of a heart. Wool is carded and teased by means of the Dipsacus fullonum. I suppose it takes the name of Dipsacus from its thirsty nature; for in all weathers it holds between its leaves an abundance of water.

Harlock, *Charlock*, *Scharlock*, and *Scarlet*, seem to be the same word with garlick, and perhaps carrot, and originally applicable to the Sinapis arvensis, or the Allium moly, or some other plant of a more orange colour. In this neighbourhood, the name of Carlock cups is given to the Ranunculi, and perhaps the Caltha; and, after all, the Calendula may be the true plant from whence the name of scarlet is derived.

Nettles, I have no doubt, receive their name from their use as a substitute for hemp in the construction of nets, and therefore the word applies to Urtica, although in this place it may be supposed as equally applicable to Lamium, or the dead nettle.

Cuckoo-flowers. This name is applied to three genera, Cardamine, Lychnis, and Orchis. On asking a poor woman for the name of the Lychnis diocia alba, she said it was called Ladies' attire:

> "And lady-smocks, all silver white,
> And cuckoo-buds of yellow hue."—*Love's Labour Lost*, act v. sc. 2.

a name certainly preferable to that of our poet for the Cardamine pratensis, to which he evidently applies it. The orchis here is called Ganderglasses and Gandergaws, but in Essex Cuckoo-flower. The woodseer, called in the New Forest Cuckoo-spit, and which, as I was informed in Sweden, the peasants there consider as the cause of madness in cattle, abounds upon the Lychnis and the Cardamine, and seems to indicate why they should bear the name of Cuckoo-flowers. Linnæus gives to the Ragged Robin the name of Flos cuculi, which I consider to be less entitled to it than the dioica; for I believe the latter to be Shakspeare's plant. The flowers of the Cardamine are considered to be antispasmodic; but, in the New Forest, the Genista anglica is administered to children for those convulsions that accompany dentition.

The cuckoo-*buds* of the above passage must be the Caltha palustris, and may possibly be our author's cuckoo-*flowers*.

Darnel is said to be a poison which destroys the sight: its quality is narcotic, and its name I suppose to be from the

same radix as the Greek ϑαρϑανω, *dormio*. The word ray, or in French *juray*, seems to be the Greek αιρα, and to mean poison, as *æs æris* in Latin, whence *ærugo*.

"'Twas full of *darnel*, do you like the taste?"—1st *Part K. H. VI.* act iii. sc. 2.

Burnet, in Latin *sanguisorba*, so called from its use being chiefly confined to young females, appears to me to be equivalent to the Greek word *parthenium*, a name generally applied to another plant used as an emmenagogue.

Cowslips. The soporific principle of these flowers may perhaps reside in their freckles. The poet has pointed to it, in his *Midsummer Night's Dream*, with peculiar beauty and elegance:

"The cowslips tall her pensioners be,
In their gold coats spots you see;
Those be rubies, fairy favours:
In those freckles live their savours.
I must go seek some dewdrops here,
And hang a pearl in every cowslip's ear."—Act ii. sc. 1.

The agreeable odour of these flowers would indicate that the virtue, if extracted by the chemist, might combine the advantages of opium with those of saffron; and the profusion in which the plant is found renders it very deserving the attention of the physician.

Clover. This, I imagine, derives its name from its leaf being cloven: it would then have the same meaning as *clubs* at cards.

Docks. This herb may take its name from its penetrating into the ground. A *dog* may also be supposed to be named from the propensity of the terrier to *dig* into the earth. The genus Rumex, particularly the species Hydrolapathum, or Aquaticus, presents us with an excellent astringent. Its affinity to the rhubarb, and the use made of the species R. acutus, would entitle it to rank high in the materia medica. The Britannica of the ancients was our common water-dock, and I am not aware that we possess a more powerful or more eligible native astringent than this plant.

Burs. Woodville, in his Medical Botany, figures the Arctium lappa, which prefers a drier situation than the A. Bardana; the latter must therefore be considered the plant of Shakspeare. The name is doubtless of the same meaning as briar, and seems to imply that it is borne away by the passing traveller, to whose clothes the flowers or the stems strongly adhere.

Darnel. I might have remarked, under Darnel, that the Myrica gale seems to possess a similar intoxicating property, and is used sparingly for that purpose in Norway, in their

drink. Being driven, by stress of weather, into Humbroe Sound, near Lillasand, I entered the house of the pilot, who had a great bunch hung up in his room. He spoke English, and, in answer to a question of mine, he informed me of its use there, and that its English name was *porse*.

Mandrake. There are two plants which are denominated Mandrake by our countrymen; they have large and forked roots. Of these, the Bryonia diocia is largest, white, and hairy; the Tamus communis is smaller, dark, and smooth. Shakspeare compares *Justice Shallow* to these roots.

"I do remember him at Clement's Inn, like a man made after supper of a cheese-paring. When he was naked, he was for all the world like a forked radish, with a head fantastically carved upon it with a knife; he was the very genius of famine, yet lascivious as a monkey, and they called him Mandrake." *King Henry IV.* act iii. sc. 2.

The etymology of the word is from its root being generally divided and forked, like a man.

"Semihominis mandragoræ flores."—*Colum.*

It is also denominated Mandragon by Gerard. The English word man exists in the Latin *humanus;* likewise in the Hebrew, and other languages. In the present instance, it is found in the Greek combined with the word *dracon*, from δερκω, *aspicio.*

Littleton supposes the word is substituted for *andragoras*, from ανηρ, *vir*, and αγορεω, *loquor*. "Quod humanam speciem quodammodo etiam vocem quum evellitur, si vera tradunt referat ejulans?" To this Shakspeare adverts:

"And shrieks like mandrakes torn out of the earth:
That living mortals, hearing them, run mad."—*R. & Jul.* a. iv. s. 2.

Again,

"Would curses kill as doth the mandrake's groan,
I'd—" *2d Part K. Henry VI.* act iii. sc. 2.

From hence it appears that the plant was believed to utter a horrible and fatal shriek when dug out of the earth.

We receive a small forked root from Chinese Tartary, the name of which is Ginseng. I have always believed that the Chinese etymology of this word was *Jin-seang*, (*vide* Morr. 8868,) Mr. Morrison, however, in No. 8803, gives it differently; and in part iii. p. 187, he gives it thus, *jin-san*, from *jin*, a man, and *san*, gradual; its slow growth being supposed, according to him, to have suggested the name. I am still of opinion that the form 8803 is rather derived from 8868, or *jin-seang*, man's likeness; and I have no doubt but it has the same meaning as the word mandrake, although the origin of the term may have been obscured by its antiquity.

Mr. Morrison illustrates the use of this root in the follow-

ing paragraph, which, as it indicates its virtue, I may be pardoned for transcribing. "The true Shang-tang gin-seng may be essayed by two men walking together a few miles, one having jin-san in his mouth, and the other with his mouth empty. When he who has nothing in his mouth is panting exceedingly, the other's breath will be just as usual." This passage reminded me of Shakspeare's

"One poor pennyworth of *sugar-candy*, to make thee long-winded."
King Henry IV. act iii. sc. 3.

Thus, ginseng appears to be chewed in the celestial empire as tobacco is with us. Loureiro shews that the Canadian root, Nin-sing, is very different in quality, as well as in appearance. Galen, writing of mandrake, observes, that its virtue resides in its rind, or bark, and he considers it as cold in the highest degree. By his terms, hot and cold, we must understand the acrid and the narcotic of modern toxicologists; and those plants the temperature of which, by the old writers, was considered as of the third and fourth degree, must merit our particular attention. The plant of Galen was the Atropa mandragora, and the Circæum of Pliny, employed by Circe in her incantations. Shakspeare alludes to it when, to imply madness, he says,

"I think you all have drank of *Circe's cup.*"—*C. of Errors*, act v. sc. 1.

And again,

"Or have we eaten of the *insane-root*,
That takes the reason prisoner?—*Macbeth*, act i. sc. 3.

As the lurid Solanum Melongena, Melanzana, or Mala insana, *mad-apples*, is evidently named from its effect upon the brain, so the analogous root of the Atropa mandragora must be the insane-root of Shakspeare. It was also administered in the liquid form; for *Cleopatra* says,

"Ha, ha,
Give me to drink *mandragora*,
That I might sleep out this great gap of time."—*Ant. & Cl.* a. i. sc. 5.

The syrup of it was likewise given as the syrup of poppy:

"Not poppy nor mandragora,
Nor all the drowsy syrups of the world,
Shall ever medicine thee to that sweet sleep
Which thou hadst yesterday."—*Othello*, act iii. sc. 3.

As the hemlock and the mandrake, so the hebenon, &c. were directed to be gathered at midnight.*

"Thoughts black, hands up, drugs fit, and time agreeing,
Confederate season, else no creature seeing.
Thou mixture rank of *midnight weeds* collected,
With Hecate's ban thrice blasted, thrice infected,

* Vide Hebenon, p. 90.

> Thy natural magic and dire property
> On wholesome life usurp immediately."—Act iii. sc. 1.
> (*Pours the poison into the sleeper's ears.*)

Being a native of the countries of Circe and Medea, it was no doubt one of those which the latter collected to renovate Æson.

> "In such a night
> Medea gathered the enchanted herbs
> That did renew old Æson."

The Parisian Circea Lutetiana is by our botanists denominated *Enchanter's*, or Enchantress's nightshade; but I generally give it the shorter name of Hagwort, and, in the manner of Pythagoras, I dedicate it to the number 2, as the Horse-chestnut and Ragwort to the numbers 7 and 13, expressive of the major and minor modes in music, and of the weeks and lunations in astronomy.

The mandrake of Scripture, which had a remarkable smell, was evidently the flower of a different plant. In Hebrew it is *Dudain* or *Davidaim*, as it were Flos amoris, or Flor-amor; and hence probably our word Daffodils.

> "That come before the swallow dares, and take
> The winds of March with beauty."—*Winter's Tale*, act iv. sc. 3.

The daffodils of Milton were, however, our Crown imperials, as, lamenting the death of Lycidas, he says, alluding to the nectaries of that flower,

> "Bid Amaranthus all his beauties shed,
> And Daffodillies fill their cups with tears,
> To strew the laureate hearse where Lycid lies."

Poppy. Having found that our Foxglove is denominated poppies in the New Forest, I have inquired in this neighbourhood also, and find that it bears the same name here; and sometimes it is contracted into *pops*. A reason is given, that the flowers can be popped upon the hand. The Papaver therefore is improperly called in English by that name. The seeds of the purple Papaver are known by the name of maw-seed, which indicates the proper English appellation of that plant; and this agrees with its name in the different languages that are dialects of the Teutonic, and also with the Greek *mecon*, &c. Shakspeare, however, when he alludes to its entering into the composition of drowsy syrups, must have meant the Papaver somniferum.

Long purples. The name of Foxglove, or Folk's-gloves, Finger-flower, or Digitalis, and Dogfingers, as it is called in Wales, together with the magnificent spike of purple flowers borne by the Digitalis purpurea, induce me to conjecture that this plant is alluded to by our illustrious poet as long purples:

"There is a willow grows ascant the brook,
That shews his hoar leaves in the glassy stream;
Therewith fantastic garlands did she make
Of crow-flowers, nettles, daisies, and long purples,
That liberal shepherds give a grosser name,
But our cold maids do *dead-men's fingers* call them."—*Hamlet*, iv. 7.

The common *blue-bells*, to which my late excellent friend, R. A. Salisbury, Esq. attached the epithet of *festalis*, might perhaps be thought to be the garland-flower of *Ophelia;* but Lightfoot says it is the Orchis mascula, though Martyn considers that the name of Dead-men's fingers would better apply to the palmated species. Lightfoot, thinking probably that he had discovered the liberal name, may have supposed, upon this foundation alone, that the plant was an orchis. What this liberal name is in reality may be known to gentle shepherds, but by me is only supposed to be the same which Dampier has applied to a South American tree, whose flowers may perhaps resemble those of our digitalis in form, if not in colour. In Hampshire, the Lotus corniculatus is called dead-men's fingers, but in the vicinity of Bristol the plant has various names; fingers and toes, devil's fingers, devil's claws, and crow-toes. The last seems to point it out as the tufted crow-toe of Milton's Lycidas. Gerard, however, in his Index, applies this name to the hyacinth, which, by Johnson, in his supplementary Appendix to his edition of Gerard, is called crow-leek.

Gerard gives the name of

Crow flowers to the Lychnis flosculi, while to another species, the dioica, he has attached that of crow-soap, which latter, in Johnson's appendix, is made synonymous with Saponaria, or soapwort. I think none of these were the crow-flowers of the poet. The Caltha palustris is called by that name in this part of the country, and is much used by children in their garlands and festivities, together with the flowers of Ranunculus bulbosus and R. acris, which are called Craysies and Mayflowers. The latter term in Middlesex is given to the Iris palustris. In Essex, the flowers called May are those of the Prunus spinosa, rather than the Cratægus oxyacantha. This discrepancy in our English names may be considered as a reproach to science; but the botanist, who delights in the contemplation and study of wild words as well as wild flowers, may find an ample field, or rather garden, for his erudition, in comparing the synonymes of British and European plants, especially those whose faculties were discovered and appreciated by our experienced and benevolent ancestors, who extended their researches

"To every herb that sips the dew."

The Caltha I take to be the Mary-buds of Shakspeare.

"And winking mary-buds begin
To ope their golden eyes,
With everything that pretty bin,
My lady sweet arise."—*Cymbeline*, act ii. sc. 3.

The Marygold is the Calendula.

"The marygold that goes to bed with the sun,
And with him rises weeping."—*Winter's Tale*, act iv. sc. 3.

Hebenon. Shakspeare ascribes the death of *Hamlet* to the juice of hebenon having been poured into his ear. As he beautifully describes the action of the poison, I transcribe the entire passage.

Ghost. "Sleeping within mine orchard,
(My custom always of the afternoon,)
Upon my secure hour thy uncle stole,
With juice of cursed hebenon in a vial,
And in the porches of mine ears did pour
The leperous distilment; whose effect
Holds such an enmity with blood of man,
That, swift as quicksilver, it courses through
The natural gates and alleys of the body,
And, with a sudden vigour, it doth posset
And curd, like eager droppings into milk,
The thin and wholesome blood: so did it mine;
And a most instant tetter bark'd about,
Most lazar-like, with vile and loathsome crust,
All my smooth body."—*Hamlet*, act i. sc. 5.

The word hebenon means black, the *h* being a non-essential letter.* Hence I conceive this plant to have been the Atropa Belladonna, which, where it is wild in Glocestershire, is by the country people called, from the colour of its fruit, Inkberries. From the following passage, I think it may have been used for poisoning darts and javelins:

"Love's golden arrow at him should have fled,
And not death's *ebon* dart, to strike him dead."—*Ven. and Adon.*

I make no doubt that the name of Henbane is a corruption of hebenon, and strictly applicable to the blackberry of the Dwale, so called from its effect in making us *dull* and sullen. (Hence Solanum? *Lethale.*)

"And duller shouldst thou be than the fat weed
That roots itself in ease on Lethe's wharf,
Wouldst thou not stir in this."—*Hamlet*, act i. sc. 5.

As for the word *nightshade*, given probably from its forming a shed for the night, this seems appropriate to the dulcamara, whose bending twigs form an arbour like the clematis. I once imagined, though I have not had an opportunity of proving it, that the nightshade possessed the property of shedding and diffusing a peculiar smell during the night, and that it

* Vide Mandrake, p. 87.

derived its name accordingly. This property has furnished appellations to the lily and the lilac. Whether the coagulations of the blood and the eruptions upon the skin, which attended the exhibition of hebenon, characterize the operation of belladonna, I must submit to the judgment of toxicologists, but I believe the description applies more strictly to that medicine than to any other.

Heart's-ease. There is an interesting, and as I am informed an ancient custom, which has descended to the present day, now existing in some parts of Wales, that, when a lady wishes to deviate from the usual practice of waiting for certain advances to be made by the other sex, she, in a graceful and elegant manner, by presenting the gentleman with a flower of the Viola tricolor, is understood to make the first overture; and thus silently, but expressively, relief is made to supersede the anxiety of mind which is occasioned by a state of uncertainty and inquietude. Hence the name of Heart's-ease.

> "Musicians, O musicians! *Heart's-ease, Heart's ease!* Oh,
> An you will have me live, play *Heart's-ease.*"—
> "Why Heart's-ease?"—
> "Oh, musicians, because my heart itself plays
> '*My heart is full of woe!*'"—*Romeo and Juliet*, act iv. sc. 5.

The French word *pensez*, supposed to be pronounced by the flower at the moment it is presented, as if conscious of the tale it bears, is the origin of our Pansey. Nothing can be more poetical than Shakspeare's use of this all but innocent flower, in his *Midsummer Night's Dream*, from which we naturally derive another etymology, that of

> "These blue-veined *violets* whereon we lean."—*Venus and Adonis.*

> "I saw, but thou couldst not,
> Cupid all armed: a certain aim he took
> At a fair vestal, throned by the west,
> And loosed his loveshaft smartly from his bow
> As it should pierce a hundred thousand hearts;
> But I might see young Cupid's fiery shaft
> Quench'd in the chaste beams of the watery moon,
> And the imperial maiden passed on,
> In maiden meditation, fancy free.
> Yet mark'd I where the bolt of Cupid fell;
> It fell upon a little western flower,
> Before milk white, now purple with Love's wound,
> And maidens call it *love in idleness.*
> Fetch me that flower, the herb I shew'd thee once;
> The juice of it on sleeping eyelids laid,
> Will make or man or woman madly dote
> Upon the next live creature that it sees. • • •
> And ere I take this charm off from her sight,
> (As I can take it with *another herb,*)
> I'll make her render up her page to me."—Act ii. sc. 2.

The medical efficacy of these plants, however, as cordials, would doubtless be lost in the form of syrup, notwithstanding

its sweetness; and I have chiefly alluded to them for the purpose of inquiring what was the plant intended by Shakspeare, under the name of *Dian's bud*, to counteract the charming influence of *Love in idleness*.

> "Dian's bud o'er Cupid's flower
> Hath such force and blessed power."—Act iv. sc. 1.

Could this by possibility have been the Samolus valerandi? My curiosity once prompted me, when walking with a farmer of this neighbourhood, to ask him if he had a name for this venerated plant, and he informed me he had only once heard it called *Kenningwort* by an Englishman, in Wales, who performed remarkable cures as an oculist by its means. He said the plant received its name from its use in curing that complaint of the eye denominated "the Kenning," which is "when a substance resembling a pea forms upon the candle of that organ." Hence the Samolus, stated by Pliny to have been worshipped in this island by our ancestors, was probably this plant, and considered by them as emblematical of the efficacy of science in deterging from the intellect the foul cataracts of ignorance and error. How appropriate to the purpose of the poet! to dissipate by its agency the hallucination of love, and to dispel all overweening fondness for our most darling prejudices.

Yew. The yew seems to have taken its name from its having been employed in the construction of yokes for cattle; or perhaps, *vice versa*, the yoke, from its having been made of yew. In this latter case, the name would be derivable from the fruit, resembling in its form and in its viscous quality the yolk of an egg. Perhaps the name exists in the Greek ζυγια, our Carpinus, or true Welsh hasel, the workers of which were the original carpenters. On the Mediterranean shores, the cypress is used for coffins, because of its incorruptibility, and the tree is planted over the graves of the dead.

> "Come away, come away, Death,
> And in sad cypress let me be laid."—*Twelfth Night*, act ii. sc. iv.
>
> "Cypress black as e'er was crow."—*Winter's Tale*, act iv. sc. 3.

Again,

> "Their sweetest shade a grove of cypress trees."
> "A cypress, not a bosom, hides my poor heart."—*Tw. N.* ac. iii. s. 1.

The true English name for the Tamaox gallica is Cifris, evidently similar to cypress, derived from a Hebrew word for grave, which occurs in the name of a station in Arabia, mentioned in the Pentateuch, *Kibroth hataavah*, or the "glutton's graves." The word *crape* is the English radix, confounded in orthography with the tree in the above passages. In the north of Europe the yew is planted for the same reason; its

boughs wave over the hearse, and its sprigs are introduced into the coffin. Shakspeare, in his *Twelfth Night*, directs the shroud to be stuck with it.

> "My shroud of white, stuck all with yew,
> Oh, prepare it."—Act i. sc. 4.

The chemical principle upon which depends the incorruptibility of this beautiful wood, and which renders the tree all but immortal, is probably the same with its poisonous quality, and which rendered it an important ingredient in the witch's cauldron:

> "Gall of goat, and slips of yew,
> Stiver'd in the moon's eclipse."—*Macbeth*, act iv. sc. 1.

I understand, in some parts of England, it is the custom as soon as a person dies, to sponge the corpse over with infusion of its fresh leaves: this preserves the body from putrefaction, and preserves it for many weeks. Professor Martyn describes the case of a young lady, who was accidentally poisoned from drinking this infusion by mistake, instead of *rue* tea, as she was advised. The result was, that although dead, she retained the bloom of her countenance, so that her attendants believed her to be only in a trance: she was accordingly kept a long while uninterred, and was finally buried without any appearance of putrefaction. The importance of this wood in ancient warfare has suggested the epithet of double-fatal, used by our author in *King Richard II.*, act iii. sc. 2.

> "The very beadsmen learn to bend their bows
> Of double-fatal yew against thy state."

Some have supposed that it was on this account so highly venerated by our ancestors, and planted by them in our churchyards: but I consider this opinion to be unfounded. Many of the yew-trees of this country are certainly 3000 years of age, and I believe that most of those in our churchyards, which are four feet thick, and some are from eight to twelve, must be older than the introduction of Christianity into this kingdom; but the demonstration and the store of facts which corroborate and prove my position, are too copious to detail in this place.

Plantage. "As true as steel as plantage to the moon." Can this be the Alisma? or is it one of the Lunarias or moonworts? I suppose it is the Alisma plantago. The dedication of this herb to the moon, or Diana, from its temperature being considered cold, and from its influence upon hydrophobic patients and lunatics, and also from its seeds being commena-gogue, leads me to conjecture that this must be the species chosen by our poet as the emblem of fidelity. The word

Plantago, Plantage, or Plantain, implying the similarity of the leaf in shape to the sole of the foot, may be more strictly applicable to the Plantago major, or the sweet-scented media; but the virtues of all are very imperfectly known to the scientific world. An individual who was bitten by a mad cat was not affected with a dread of water till the lapse of a long period of time, but she experienced a recurrence of pain and irritation *at every change of the moon*, and she was finally attacked by death, after the regular intermission of a month. I am therefore of opinion that Shakspeare was acquainted with the fact that hydrophobia is relieved by the Alisma. It might be advantageous to our excellent Society, if its learned members were to institute inquiries amongst the poor people of the country, relative to the properties of this and such like plants, and not reject hastily and with disdain the important knowledge to be sometimes derived from their experience. It was by such inquiries that my late immortal friend made the discovery of vaccination, which, by philosophical reasoning and induction, he rendered more and more certain as a preventive of one of the most distressing "ills that flesh is heir to." The more common use of ordinary plantain as an application to wounds is likewise noticed by Shakspeare.

"*Benvolio.* Take thou some new infection to thy eye,
And the rank poison of the old will die.
Romeo. Your plantain leaf is excellent for that.
Benvolio. For what, I pray you?
Romeo. For your broken shin."—*Romeo and Juliet*, act i. sc. 2.

I cannot refrain from mentioning here two instances of the use of medico-botanical knowledge. The first is the case of an acquaintance of mine who has long been a cunning workman in British fancy woods: he walks rather lame, but occasionally goes a considerable distance. He broke his leg, and was confined to his chamber for four years. He informs me that the faculty considered his case as desperate, after trying all their skill without effect. He was recommended to a certain plant, which he was directed to apply externally as a poultice. This succeeded; it brought away splinters of bones, &c., and effected so complete a cure, that in a few weeks he was enabled to walk and enjoy exercise in the open air as before. It is curious that he defied me as a professor of botany to mention the name of the plant which had afforded him relief; he kept it secret, and assured me he had operated in the same successful manner upon four other persons discharged as incurable from our infirmary. In his chuckling he said that nobody had ever guessed at the remedy but a Frenchman, who declared that the peasants of that country were well

acquainted with its merits. He was perfectly astonished when I told him it could be no other than Comfrey, and he immediately waved his hat in triumph, shouting "Comfrey for ever!"

The second was the daughter of a most respectable bookseller, who was confined with a slight sprain in her ancle, from dancing. The medical gentlemen were of great eminence who attended her; the injury became worse and worse; and, after a confinement to her bed of, I believe, eleven months, her life was almost despaired of, when permission was obtained to apply, at the suggestion of a poor individual, the simple leaf of a garden-herb, which was considered as likely to be of service. The leaf was applied, and from that moment the pain diminished. In a few days the leg was healed up, and the young lady completely restored to her health. A small specimen of the plant was carefully cultivated in a flowerpot, and when I was applied to for its name, I recognised the Valeriana Phu. In this manner I think it advisable to make inquiries, if opportunities should occur, respecting the Lunarias, or moonworts, and the Alyssums of Dioscorides, Pliny, Galen, and Tabermemontanus; comparing them with the criticisms of botanists, and the experience of country people. I have no doubt that much information would be obtained confirmative of the interesting anecdote related by your lordship.

The Mercurialis perennis, or Cynocrambi, called Dog's mercury, as is reported, from its virtue having been discovered by Hermes, is the plant used in Spain for curing hydrophobia. It is here called Bristol-weed, and, from its appearing to contain a blue dyeing and cathartic principle, similar in all probability to that of oleander and indigo, I suspect it to be the Glastum, or woad, of our ancestors. Glas is the Welsh word for what is blue and transparent; it occurs seemingly in the word Ganderglasses, or Gandergaws; our name for orchis, the first part of the word *Gander*, being merely the Greek ὄρχις, and the Latin *anser*, meaning male, and therefore applicable to the O. mascula and O. morio, the flowers of which in pastures appear like gems, constituting a *gaudy* and brilliant enamel, one of the most beautiful in nature.

The plant Horehound is likewise a remedy for hydrophobia, and takes its name accordingly; the first syllable of the word being the Greek κυν, *cuno;* and Diascorides attests its efficacy. The true horehound is therefore the Marrubium Alyssum, or the Alyssum of Galen.

We may likewise inquire relative to the Dog-violet, whether the Viola canina may not possess this faculty, or the Dentaria,

called toothed violets, and sometimes dog's-tooth violets, or the Erythronium dens canis; called also in Hampshire, where it is abundantly wild, the dog's or hound's tooth violet.

The name of hound's-tree, or hound's or dog's berry, given to the Cornus, would authorize a trial of this fruit likewise in this horrible complaint.

Whether the word Madnep indicate another cure may be inquired, and whether the name apply to Heracleum Sphondylium, Heracleum Panaces, Partinaca Opopanax, or the Angelica Archangelica?

But, if we are to believe Pliny, we are indebted to the oracle for the discovery that the root of Cynosbatos, or Cynorrhodon, Rosa canina, or dog-rose, is a remedy for hydrophobia. It will appear, from the following extracts, that our medical roses were all known to Shakspeare, and celebrated by him, although not indeed for their therapeutic efficacy.

Notwithstanding the best conserve is made from the fruit of the Rosa arvensis, or apple-rose, yet we must suppose that our poet, by scarlet hips, referred to the fruit of the common briar. "The oaks bear mast, the briars scarlet hips." *Timon*, act iv. sc. 3.

The R. damascena is used for syrups, and the variety γ of Martyn must be the true damask-rose, so elegantly and poetically referred to in the following passages:

> "Fair ladies mask'd are roses in the bud;
> Dismask'd, their damask sweet commixture shews,
> Are angels veiling clouds, or roses blown."—*Love's L. L.* a. v. s. 2.

> "There was a pretty redness in his lip,
> A little riper and more lusty red
> Than that mixed in his cheek: 'twas just the difference
> Betwixt the constant red and the mingled damask."
> *As You Like It*, act iii. sc. 5.

> "I have seen roses damasked red and white,
> But no such roses see I in her cheek."—*Sonnet* 130.

> "Gloves as sweet as damask-roses."—*Winter's Tale*, act iv. sc. 3.

He also contrasts the *red* with the *white* rose, both of which contain the same medical astringent property. The white rose being rubbed on alkaline paper, instantaneously produces a very beautiful yellow colour, which may be used as a dye.